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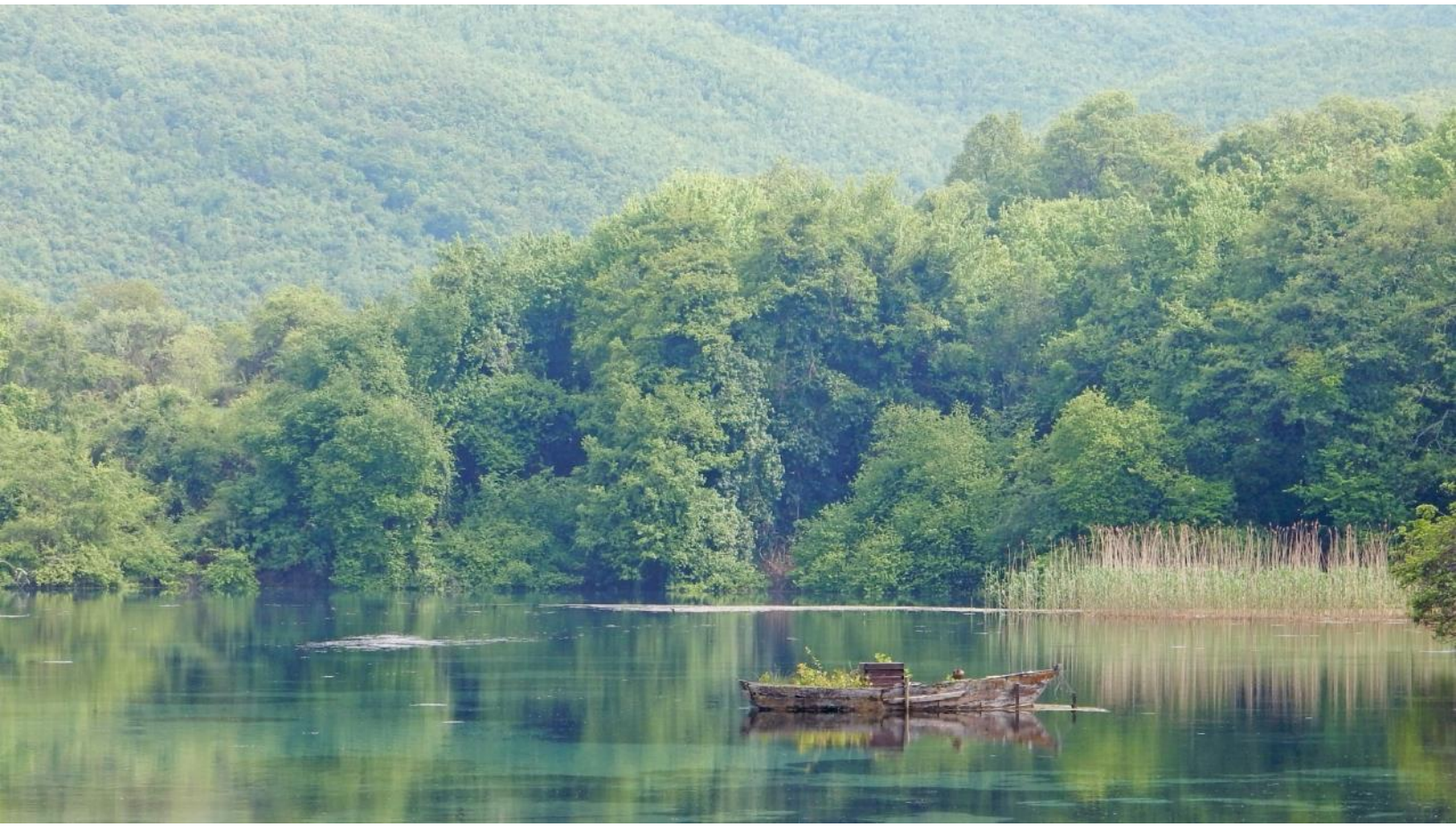

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USAID/NORTH MACEDONIA
FOREIGN ASSISTANCE ACT SECTION 119 BIODIVERSITY ANALYSIS

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ACRONYMS

CBD	Convention on Biological Diversity
CDCS	Country Development Cooperation Strategy
CITES	Convention on Trade in Endangered Species
DO	Development Objective
DREM	Development of Regional Energy Markets
EIA	Environmental Impact Assessment
FAA	Foreign Assistance Act
GEF	Global Environment Fund
GIS	Geographic Information Systems
GIZ	German Corporation for International Cooperation
EU	European Union
IRs	Intermediate Results
IUCN	International Union for Conservation of Nature
MAFWE	Ministry of Agriculture, Forestry and Water Economy
MAPs	Medicinal and aromatic plants
MES	Macedonian Ecological Society (MES)
MEPP	Ministry of Environment and Physical Planning
MSMEs	Micro, Small and Medium-sized Enterprises
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Governmental Organization
NP	National Park
NTFP	Non-timber forest product
PA	Protected Area
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Cooperation Agency

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development

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EXECUTIVE SUMMARY

This Biodiversity Analysis has been prepared for the United States Agency for International Development (USAID)/North Macedonia as they begin the process of developing their Country Development Cooperation Strategy (CDCS) which will run from 2020 to 2025. This analysis fulfills Foreign Assistance Act (FAA) Section 119 which requires that each country development strategy, statement, or other country plan prepared by USAID shall include an analysis of:

- the actions necessary in that country to conserve biological diversity, and
- the extent to which the actions proposed for support by the Agency meet the needs thus identified.

In addition, this analysis provides an overview of the conservation status of biodiversity in North Macedonia, the stakeholders involved, and a series of recommendations that USAID/North Macedonia can consider as they formulate their new strategy. It is not expected that the new strategy will differ substantially from the Strategic Framework 2018-2020 that the Mission is currently operating under which has one Development (DO) Objective with four Intermediate Results (IRs). The IRs focus on increased private sector growth, enhanced participation by informed citizens, strengthened good governance, and improved social cohesion.

North Macedonia is a land-locked country in the central part of the Balkan Peninsula with ample freshwater resources in the form of lakes, rivers, streams, wetlands, and springs. Forests cover about 40% of the country. The terrain includes mountains, gorges, caves, and other ecosystems harboring local and regional endemic species. North Macedonia occupies only a tiny portion of the European continent, but a large portion of European biodiversity is concentrated within this small territory.

The protected areas of North Macedonia include three national parks and a number of areas protected under various other designations (see Annex E). The national parks and most other protected areas are supported primarily through cutting timber—the central government provides no additional support. A solid framework of laws and policies protects species of international and national importance in the country. There are a number of local, national and transboundary nature-related NGOs and some strong academic institutions but few have sufficient capacity to be effective without donor support. The biodiversity of North Macedonia faces a number of direct threats and drivers (indirect threats) that challenge species and ecosystems throughout the country.

This analysis team conducted a desk study of available documents and online sources, interviewed stakeholders, and visited key conservation areas and habitats to formulate these lists of direct threats and drivers. Major direct threats to North Macedonia's biodiversity include the interrelated factors of 1) conversion of native habitats; 2) agricultural practices; 3) fires; 4) alteration to flow regimes of natural waterways; 5) timber and fuelwood extraction; 6) mining; 7) overexploitation and illegal harvest of plant and wildlife species; 8) air and water pollution; 9) invasive, non-native species; and 10) climate change.

The drivers behind these threats are factors at the policy, institutional, and economic levels and are often those best addressed by donors like USAID. In North Macedonia these include the following:

1. Lack of Sustainable Biodiversity Financing Mechanisms

2. Weak Enforcement and Implementation of Existing Mechanisms
3. Lack of Capacity in Biodiversity Conservation Efforts
4. Lack of Accessible and Shareable Data
5. Lack of Administrative and Management Coordination
6. Ineffective Management of Protected Areas
7. Poverty in Rural Areas
8. Low Level of Awareness of the Importance of Biodiversity

The actions necessary to address these direct threats and drivers in North Macedonia are given in Chapter VII and include 33 items derived from stakeholder consultations, site visits, literature review and the analysis team's expertise. Most of these are very specific and can only be targeted by organizations focusing on biodiversity conservation. Some of the suggested actions necessary, however, relate or could relate to USAID/North Macedonia's existing IRs. The final two chapters of this report look at these possible connections. At present the "extent to which" the Mission addresses the actions necessary for biodiversity conservation is minimal. On the other hand, no potential negative effects on biodiversity are evident in Mission activities.

Specific recommendations for activities that could fit within the existing Mission IRs are provided under three conditions: opportunistic, proactive and direct threat reduction based on increasing levels of commitment needed by the Mission to undertake these. The analysis team has also provided a list of overall recommendations that they believe are most important for the Mission to consider. Six of these in italics below could fit into existing IRs and an additional eight are given in the event that new IRs are added in the CDCS under development.

TOP PRIORITY RECOMMENDATIONS

1. Strengthen capacities of different actors to develop a suitable model for a sustainable financing mechanism for conservation of biodiversity and environment protection.
2. *Raise awareness and educate the government about the necessity and importance of biodiversity conservation for long-term sustainability of North Macedonia's natural resources. (IR 3)*
3. *Strengthen ecotourism, production and sale of nature-related products and native agricultural products and other activities that can help in biodiversity conservation. (IR 1)*
4. Strengthen the capacity of relevant governmental environmental agencies and relevant faculties in biodiversity monitoring, data collection, and data sharing to establish a national biodiversity monitoring system.
5. *Strengthen the capacity of relevant inspection agencies (known as Inspectorates) and the police to enforce laws and the judicial system to carry through with appropriate penalties. (IR 3)*
6. *Strengthen media efforts to promote more biodiversity conservation, not only waste management and air pollution issues which already receive attention in the press. (IR 2)*
7. Support efforts to incorporate biodiversity and natural ecosystem concerns into spatial planning and development at the local, regional and national levels.
8. Support capacity building and the development and use of local level conservation action plans that address financial sustainability.

SECOND PRIORITY RECOMMENDATIONS

1. Provide technical assistance to the government to develop policies and regulations that allow and support joint conservation measures among agencies, academic institutions and qualified nature-based NGOs.
2. Support a program that trains environmental lawyers and provides a hotline to report crimes and other measures that increase enforcement of nature protection laws.
3. *Support formal and informal education programs related to ecology and nature. (IR 3)*
4. Strengthen capacity of NGOs to conduct nature conservation-related activities like surveys, species studies, and education/awareness programs in rural areas.
5. *Strengthen the capacity of and provide training for water, environment, agriculture, CITES and other inspectors working in biodiversity-related matters. (IR 3)*
6. Support government efforts to mainstream biodiversity conservation in other sectors.

This document will guide USAID/North Macedonia as it develops the new CDCS for 2020 to 2025 and considers some of the recommendations needed to conserve biodiversity. The material collected for this analysis should also be of use to others working on biodiversity conservation issues in the country.

I. INTRODUCTION

1.1 PURPOSE

This Biodiversity Analysis is prepared to assist the United States Agency for International Development (USAID)/North Macedonia as it develops a new Country Development Cooperation Strategy (CDCS) for 2020 to 2025. This analysis will fulfill Foreign Assistance Act (FAA) section 119 which requires that each country development strategy, statement, or other country plan prepared by USAID shall include an analysis of:

- the actions necessary in that country to conserve biological diversity, and
- the extent to which the actions proposed for support by the Agency meet the needs thus identified.

Beyond this, the analysis provides an overview of the current status of biodiversity conservation in North Macedonia, the stakeholders and policies involved and recommendations for the Mission for taking biodiversity into consideration in developing their new CDCS. This information should also be useful to those in North Macedonia that are involved in biodiversity conservation initiatives.

The initial FAA 119 Report for Macedonia was prepared in 2001 (USAID, 2001) and updated in 2010 (USAID, 2010). This document is the first full Biodiversity Analysis since 2001. The Scope of Work for this Analysis is presented in Annex A.

1.2 BRIEF DESCRIPTION OF THE USAID PROGRAM

USAID/North Macedonia is currently operating under a Strategic Framework 2018-2020 with a single Development Objective (DO): "Macedonia is a Prosperous, Self-reliant and Inclusive Democratic Society." Four intermediate results (IRs) are as follows:

- IR1: Increased private sector growth,
- IR2: Enhanced participation by informed citizens,
- IR3: Good governance strengthened and
- IR4: Improved social cohesion.

A regional energy program, Development of Regional Energy Markets (DREM), is also part of the Mission's portfolio.

The current Mission program and activities do not directly relate to natural resources or biodiversity conservation although there are some opportunities for overlap. The new CDCS is expected to have components largely like the current ones.

1.3 METHODOLOGY

The analysis team consists of Dr. Pat Foster Turley (Team Leader), Robertina Brajanoska (Senior Biodiversity Specialist), Natalija Melovska (Flora Specialist), and Aleksandar Stojanov (Fauna Specialist). All three of the North Macedonian team members have strong experience and long tenures working on nature conservation issues in the country. Short bios of these team members are presented in Annex B.

Work began in early April 2019 with a literature search and book study. These sources and others that were used during this project are provided in Annex C. During this pre-trip phase, telephone conference calls were also conducted with key USAID staff in Washington and in North Macedonia. The work in North Macedonia was conducted from May 8 to May 23, 2019. Once in-country, the team conferred with Mission staff and conducted a total of 27 interviews with donors, academics, government officials, non-government organizations (NGOs), and other stakeholders in Skopje and in the field.

Site visits were chosen in consultation with USAID/North Macedonia and the local team and selected to show a diversity of habitats, biodiversity threats and protected areas (PAs) under various forms of management. At all sites, key personnel, including managers and staff, were interviewed and an overview of major natural features was conducted as time allowed. Non-governmental organizations (NGOs) active in biodiversity conservation were also interviewed during these field trips. The field sites and facilities visited included the following:

1. **National Parks and Protected Areas:** Mavrovo National Park, Pelister National Park, Galicica National Park, Matka Gorge, Prespa Lake Natural Monument, Lake Ohrid UNESCO site, Bogdanci site (Important Plant Area) and Dojran Lake Natural Monument and Ramsar site
2. **Other Institutions:** Hydrobiological Institute Ohrid

Further meetings were held in Skopje after the site visits to help finalize the recommendations in this report. A debriefing PowerPoint presentation and draft recommendations were presented to the Mission on our last day of work in country, May 23.

This Analysis report has been prepared following the Foreign Assistance Act Sections 118/119 Tropical Forest and Biodiversity Analysis: Best Practices Guide (USAID, 2017).

II. COUNTRY CONTEXT

2.1 LOCATION AND COUNTRY CONTEXT

The Republic of North Macedonia is situated at the center of the Balkan Peninsula, surrounded by the countries of Greece, Albania, Kosovo, Serbia and Bulgaria. Previously known as the Former Yugoslav Republic of Macedonia, North Macedonia officially adopted its new name in June 2018 to settle a dispute with Greece. It is part of the wider Mediterranean Region that has been identified as the third most important biodiversity hotspot in the world with respect to the number of endemic plant species (Myers et al. 2000). Although relatively small in territory—slightly larger than the U.S. state of Vermont (Central Intelligence Agency, 2019)—the country holds an important position on the global map of biological diversity hotspots.

The population of North Macedonia in July 2018 was estimated to be 2,118,945 (Central Intelligence Agency, 2019) which amounts to an average density of 82.4 inhabitants per square kilometer ($km^{2)}$. In administrative terms, the Republic of North Macedonia is divided into 80 municipalities and the City of Skopje is composed of 10 municipalities. Out of the total population, 58% live in urban areas with the greatest concentration in the capital, Skopje. Migration of the population from rural to urban settlements is generally present, especially from smaller towns to the City of Skopje. This migration from rural areas has led to a loss of plant biodiversity that has long been maintained by traditional

grazing in pastures, which are now turning to brush. Migration from North Macedonia to other countries is on the rise as well, leading to a loss of well-trained and knowledgeable experts in search of better opportunities elsewhere.

2.2 BIOPHYSICAL SETTING

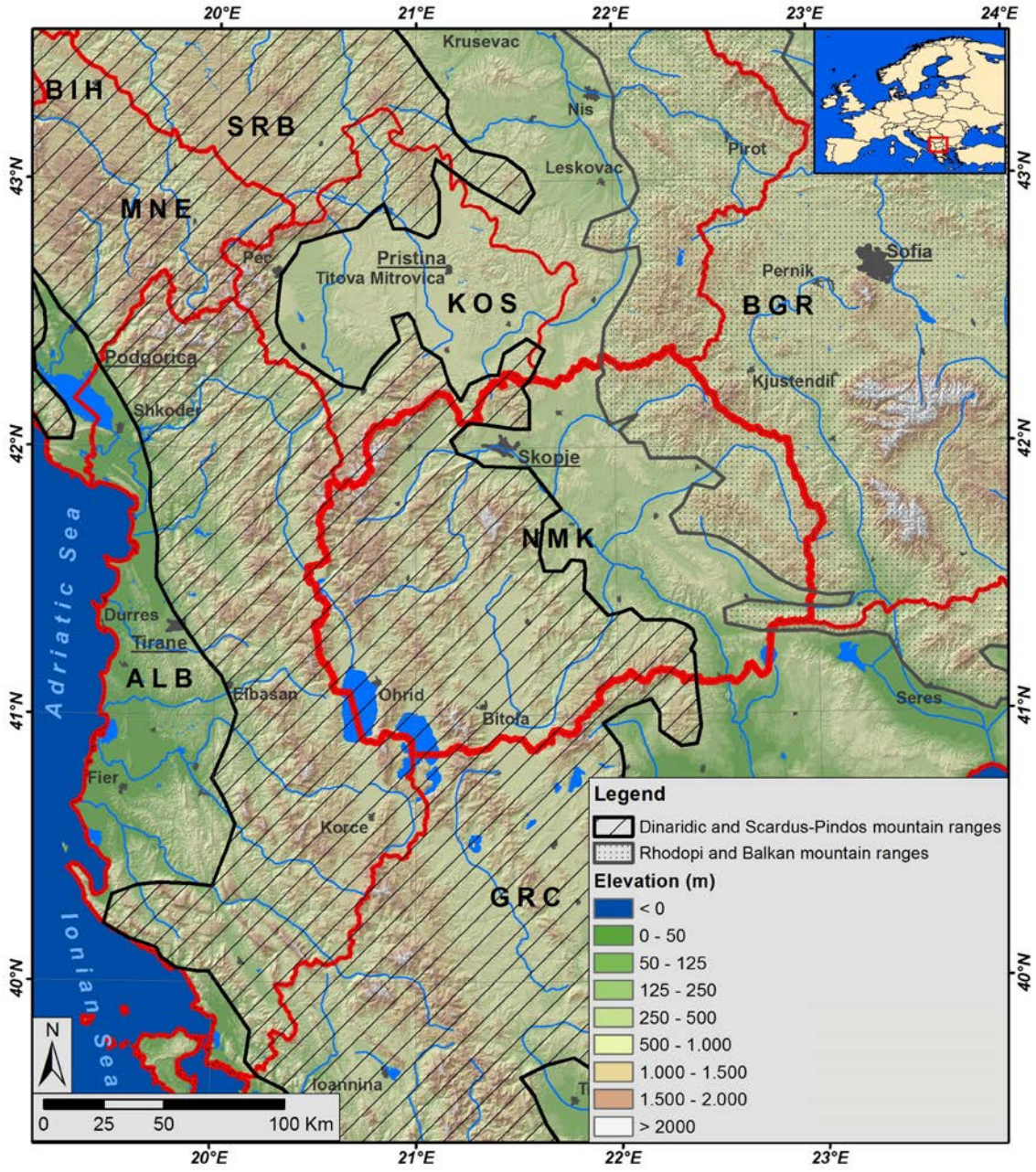
North Macedonia is a land-locked country with ample freshwater resources in the form of lakes, rivers, streams, wetlands, and springs. The Vadar River is the longest river in the country (388 km) and drains into the Aegean Sea in Greece. The Vadar River Basin occupies about 80% of North Macedonia's territory (Stojmilov, 2002). Major lakes include transboundary lakes: Ohrid Lake (also bordered by Albania); Prespa Lake (also bordered by Greece and Albania); and Dorjan Lake (also bordered by Greece). A map of aquatic resources is found in Annex I, Maps.

Much of the country (44.1%) lies on an altitude between 500 and 1000 m (State Statistical Office, 2018), and nearly 80% of the territory is hilly and mountainous, with several valleys connected with deep gorges and canyons (Ministry of Environment and Physical Planning [MEPP], 2018a). There are two main mountain groups in North Macedonia: 1) the Sar mountains (part of the Dinaric Range) found in the western and southwestern regions, and 2) the Osogovo-Belasica mountain chain (also known as the Rhodopes) in the southeast (Stojmilov 2002), as shown in the map below.

There are three main climate types in North Macedonia: sub-Mediterranean in the southern, lowland area (characterized by dry summers and mild, wet winters); alpine in the mountainous regions at 1,500 meters altitude and above (characterized as areas above the tree line where the mean monthly temperatures are below the 10°C), and a continental climate (characterized as relatively dry climate with very hot summers and very cold winters) everywhere else. The annual precipitation varies between 1,400 mm (millimeters) in River Radika valley (western parts) and less than 500 mm in central parts of the country (Gradsko, Ovche Pole and Veles area; Melovski et al. 2013).

Air, water and land pollution in North Macedonia are all problematic. The European Air Quality Index in December 2018 listed two cities in Macedonia, Skopje and Tetovo, as the most air polluted cities in Europe. Water pollution primarily from agriculture and untreated municipal wastewater is also a major concern (Dimitrovska et al, 2011). Also, most municipal disposal sites are not regulated, there are many illegal dumpsites and a number of industrially contaminated hotspots (European Environment Agency, 2018).

MAP OF NORTH MACEDONIA[1]



1. Note: "NMK" is not the proper ISO code for North Macedonia. It has been used at the request of USAID. Per the "Prespa Agreement" NMK is intended only for car registration tables.

III. STATUS OF THE NORTH MACEDONIA'S BIODIVERSITY

North Macedonia occupies the central part of the Balkan Peninsula, one of the richest European regions for biological diversity (Kryštufek & Reed, 2004) with a high level of species and habitat richness. On a regional scale, the biodiversity of North Macedonia includes about 70-90% of the entire Balkan biodiversity (UNDP, 2010). One of the main reasons for the high biological diversity is weak glaciations and the existence of continuous forest vegetation in the south, which has enabled these areas to nurture and preserve biodiversity (Tzedakis, 2004). Another prominent feature of North Macedonia's biodiversity is its heterogeneity, consisting of various complexes of faunal and floral elements with Mediterranean species going hand-in-hand with alpine, boreal or steppe species.

3.1 MAJOR ECOSYSTEM TYPES AND STATUS

According to the recently adopted (MEPP, 2018a) National Biodiversity Strategy and Action Plan (NBSAP) there are 28 different ecosystems in North Macedonia, but for the purposes of this report we group ecosystems into aquatic, forests, and other terrestrial ecosystems.

AQUATIC ECOSYSTEMS

The Vadar River is the longest river in North Macedonia, cutting through the center of the country, with a watershed including about 80% of the country (MEPP, 2018a). Other major rivers include Bregalnica, Crna Reka, Treska, Pchinja, Babuna, Topolka, Crn Drim, and Radika. There are also around 160 lakes covering about 2% of the country. Of those, 50 are natural and the rest are artificial (MEPP, 2018a). There are three tectonic lakes in Macedonia, Ohrid, Prespa and Dojran Lakes, each with significant biodiversity values.

- **Ohrid Lake,** the oldest lake in Europe is one of the most important hotspots of endemic biological diversity globally (Wilke et al. 2008). Ohrid Lake, with its 212 endemic species and area of 358 km^2, is also said to have the greatest diversity per area unit of any lake in the world (Albrecht & Wilke, 2008). Wetlands around Ohrid Lake are proposed to be part of Ramsar site within North Macedonia.
- **Prespa Lake,** the first Ramsar site in the country has the largest nesting colony of Dalmatian pelicans (*Pelecanus crispus*) in the world. The global population of this species has been estimated at 4,350 to 4,800 breeding pairs (Birdlife International, 2014), out of which more than 1,100 (20%) nest in the Greek part of Prespa (SPP, 2014). According to the 2016 International Union for the Conservation of Nature (IUCN) data, this species is considered globally threatened and has been categorized as "vulnerable" (VU).
- **Dojran Lake** is the second Ramsar site in North Macedonia, with ample wetlands in the southeastern part of North Macedonia.

There are also many unique aquatic habitats in North Macedonia including underground and above-ground springs, wetlands, streams and bogs, all with specific ecological niches for specialized species.

FOREST ECOSYSTEMS

Forest ecosystems cover around 40% (988,835 hectares) of the country's territory and are made up mostly of deciduous trees (61.14%), mixed forests (28.94%), evergreen forests (6.49%) and the rest is

considered degraded (Macedonian Forests online). Oaks (*Quercus sp*.) and beech (*Fagus sp*.) are the primary deciduous trees. A number of forest tree and plant species are near-endemics including the Macedonian Pine or Molika (*Pinus peuce*), a species endemic to the Balkans, which occupies approximately 1,800 hectares in Pelister National Park and is one of the most representative examples of this habitat type in Europe.

Since 2000, the most significant change in land cover of North Macedonia is the loss of 6.6% of the total broadleaf forest (506 km^2), mostly due to forest degradation and forest fires resulting in the increase of the "Transitional woodland-shrub" and the "Burnt area" land cover categories of 406 km^2 and 90 km^2, respectively (based on the CORINE Land Cover data from year 2000, version 18.5.1).

Pure coniferous forests are one of the most vulnerable forest ecosystems, because, at higher altitudes, their available territory decreases as the climate warms and they are especially threatened with forest fires. The fires in the last two decades are one of the most destructive factors for the forests in the Republic of North Macedonia. For the period 1999–2017 the total number of forest fires is 4,043, the total burned area is 171,488 hectares (ha), and total volume of burnt timber is 1,838,245 cubic meters (State Statistical Office, 2018, online).

Mixed forests and natural grasslands have a very high potential to support biodiversity, as indicated by the presence of selected species, functional groups of species and species composition. Other ecosystems, such as broad-leafed forest, coniferous forest, moors and heathland, *Sclerophyllous* vegetation, transitional woodland-shrub, water courses and water bodies, have high potential and thus may be regarded as important for the conservation of biodiversity. A map of ecosystems in presented in Annex I.

OTHER TERRESTRIAL ECOSYSTEMS

A large part of the national territory is agricultural land (44%) (MEPP, 2018a). This land area includes plowed fields, gardens, orchards, vineyards, meadows and pastures that cover 54% of the overall agricultural land. The rests of the land classified as agriculture consists of alpine natural or semi-natural grass habitats which also support rich and important biological diversity.

North Macedonia also has a variety of smaller ecosystems including caves, gorges, saline steppes, and other habitats that provide specialized niches for a number of rare and endemic species. The caves are home to a variety of specialized fauna, such as crabs, spiders, pseudo-scorpions, bats, and various insects. The cave fauna is characterized by high levels of endemism, reaching 90% (MEPP, 2018a). The richest cave fauna occurs in the caves in Western Macedonia, especially the caves in the watershed of the river Radika, Galichica, Jakupica and Poreche. Among the cave dwelling bats, there are three horseshoe bat species that are categorized as vulnerable (VU) at the European level (IUCN, 2016).

3.2 SPECIES DIVERSITY AND STATUS

North Macedonia is characterized by high species diversity and high level of relict and endemic species. According to the current scientific knowledge, there are about 23,000 species recorded in North Macedonia. Given the fact that knowledge of certain taxonomic groups is modest or missing, the real picture of the rich biological diversity of the country is still incomplete. North Macedonia occupies only 0.26% of the European continent, but a large portion of European biodiversity is concentrated within

this small territory. It contains 34% of vascular flora, 20% of fishes, 19% of amphibian, 21% reptilian fauna, 64% of avian and 34% of mammal species that live on the European continent (MEPP, 2018a).

The flora of North Macedonia is represented by a mosaic of diverse floral elements and many Balkan and local Macedonian endemic plant species. There are 120 local endemic species, and some have cultural, medicinal or aromatic uses, including *Thymus oehmianus*, *Viola kosaninii*, *Crocus cvijici*, *Crocus scardicus*, *Colchicum macedonicum* (MEPP, 2018a). The economically important plants, especially the ones that have a good price on the market, are under threat of over legal and illegal collection. The local analysis team reports that species like yellow gentian (*Gentiana lutea*), harvested for its roots, are both protected and illegally overused for medicinal or cultural purposes. The two species of bilberries (*Vaccinium spp*.) are the most popular berries being collected in the country. These are also protected yet there are also problems related to illegal collection.

The invertebrate fauna of North Macedonia is represented by 13,379 species (Hristovski et al. 2015), with 608 of them being endemic (Petkovski, 2009). The highest number of endemic and relict invertebrate species is found in Ohrid Lake, Prespa Lake, and mountainous areas in the western parts of the country.

Vertebrate fauna of North Macedonia consists of about 554 species, with birds being the most numerous group at 334 species (60% of all vertebrates) (MEPP, 2018a; Micevski et al., 2018.). About 85 freshwater fish species are found in North Macedonia. Prespa and Ohrid Lakes are richest in endemic fish species, but their fish fauna has been endangered during past decades by overexploitation, habitat destruction, pollution and introduction of non-native and invasive species. The endemic Ohrid trout is a typical example of severe population decline during the past decades due to overfishing (Spirkovski 2004). Herpetofauna of North Macedonia consists of 46 species, out of which five species are Balkan endemics (one newt, one frog, two lizards, and one snake). There are no globally threatened species of amphibians and reptiles. Analysis of the reptile diversity showed that the regions with the highest species diversity are Prespa and Ohrid Lake Region, Skopje region, Veles region and the Dojran Lake Region (Sterijovski et al., 2014). These regions should be considered for the future designation of important herpetological areas at the national level.

There are no endemic bird species on a national level. Due to deteriorating living conditions, at least eight nesting bird species are fully extirpated from North Macedonia and an additional seven bird species are lost as nesting species. Vultures and eagles are particularly vulnerable in North Macedonia due to poisoned bait set out to control livestock predators like wolves and jackals. These baits have already caused the extinction of bearded (*Gypaetus barbatus*) and black vulture (*Aegypius monachus*) and reduced the populations of Egyptian (*Neophron percnopterus*) and griffon vultures (*Gyps fulvus*) (MEPP, 2018a).

Mammalian fauna is represented by 87 species and has the highest diversity in the mountains of Western Macedonia. There are four mammal species that are endemic to the Balkans—one mouse, two voles and a mole. Endemism in mammals is also high on the subspecies level, with two localized subspecies of ground squirrels (*Spermophillus spp.*), the Balkan chamois *Rupicapra rupicapra balcanica* and the Balkan lynx (*Lynx balcanicus*). The small population of the Balkan lynx, with likely under 100 adult individuals in its entire distribution range (Melovski et al., 2012), is of great importance for nature conservation and is classified by IUCN (IUCN, 2016) as a "Critically Endangered Species.".

Many species in various taxonomic groups are included on national and international threatened species lists. Twenty-one species of fungi, fourteen species of invertebrates, three species of fish and one species of mammal (the Balkan lynx) are listed as critically endangered (CR), the highest level of threat category of the IUCN Red List. See Annex D for a chart listing the species protected under various national and international policies.

There are no capacities established so far in North Macedonia for rescue and care of injured, abandoned and confiscated specimens of protected wildlife, although a recent MEPP initiative seeks to establish a rescue center for wildlife in Galicia National Park.

3.3 GENETIC DIVERSITY

Genetic diversity of wild species in North Macedonia is insufficiently documented and it has been generally targeted at determining phylogenetic (relational) links between species.

There are no systematic studies of genetic diversity in the sphere of flora and wild fauna. Regarding flora, 600 species of angiosperm plants have been cytologically elaborated. The Botanical Garden of the Institute of Biology at the Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University—Skopje provides a facility for ex situ growing of certain endemic and rare plant species. Additional financial resources are needed to continue this activity. Several systematic groups of fauna have been elaborated to clarify taxonomic status of "species" and phylogenetic relations (trout, amphipod and isopod crayfish).

The Ministry of Agriculture, Forestry and Water Economy (MAFWE) is the responsible national institution for management, preservation and protection of genetic resources of native varieties of agricultural plants and livestock breeds. MAFWE collaborates with other relevant institutions, primarily scientific and academic institutions, but also public and private enterprises, farmers and non-governmental organizations.

The Law on Agriculture and Rural Development stipulates assistance in the preservation of genetic diversity of native agricultural plants and native livestock breeds and prohibits their eradication. The Law on Livestock Breeding defines various cattle and sheep species (Balkan goat; local primitive pig; domestic hen; domestic buffalo; domestic horse; domestic donkey; Macedonian bee; and shepherd dog Sharplaninec) as native breeds. Of these, three are listed as critically endangered: the Karakachanian sheep, the local water buffalo, and the local goat. Two others, the Srebra chicken and Busha cattle, are listed as at risk, with the status of the rest unknown (MEPP, 2017). There is a significant decline in the strains of domestic animals due to human depopulation of mountainous areas and a focus on more productive modern breeds in livestock production. Current protection programs are in place for Busha cattle, Ovchepolian sheep, and Srebra chickens. Farmers' participation and initiatives have been encouraged but are still not sufficient. Although Busha cattle and Ovchepolian sheep have had considerable protection, their long-term sustainability could easily be jeopardized if further financial support is no longer available (Ivanvska & Andonov 2018).

Intensive activities for conservation of plant genetic resources started in 2004 with the initiation of the SEED-Net Project, supported by the Swedish International Development Cooperation Agency (SIDA). Since then numerous activities have been undertaken for the conservation of plant genetic resources used for food and agriculture like wheat, forage, vegetables, fruits and grapevine crops, as well as

medicinal and aromatic plants (MAPs). The Gene Bank of the Institute of Agriculture has been upgraded, databases established, and sample collection, categorization, and evaluation has been improved. Collection of 2666 samples of 89 different agricultural species and 45 MAP species were maintained. However, since 2013, they have not been regularly checked for germination status and the MAPs collection in the botanical garden has also been abandoned due to lack of funding in the Institute of Agriculture. The Faculty of Agricultural Science and Food at the Ss. Cyril and Methodius University in Skopje has also been active in plant genetic resources conservation for several decades but has a small number of seeds that urgently need to be multiplied (Ivanovska & Andonov, 2018). In addition, genetic resources of vegetables and fruits like many local varieties of beans, pepper, tomato, and plums, are held in situ on small private farms.

3.4 STATUS AND MANAGEMENT OF PROTECTED AREAS

The establishment of the PAs network is one of the priority actions for preservation of biodiversity in North Macedonia and began in 1948 when the first national park, Pelister, was proclaimed. The Law on Nature Protection (2004) provides a legal basis for the establishment of a representative and efficient system of PAs that is harmonized with IUCN categories and also encourages the development of trans-boundary PAs. The development of a Natura 2000 network of PAs is now underway as a prerequisite in the process of European Union (EU) approximation (the requirement that national laws, rules and procedures adhere to EU standards).

At present, the network of PAs in North Macedonia is not a coherent system—it covers areas proclaimed in different periods, according to different categorizations and with different goals that often do not fit into standard IUCN categories. Changes are now underway to re-categorize PAs, but this is happening very slowly. The Nature Unit within the Ministry of Environment and Physical Planning (MEPP) is responsible for the re-designation process, developing protection strategies, supervision of the management of PAs, approval of annual work plans and other activities related to PAs and nature conservation. An analysis of existing and planned PAs was undertaken by the Macedonian Ecological Society (Macedonian Ecological Society, 2011) to help/support the responsible institutions in establishing an effective protected area network that will provide protection to the important species and habitats in the country.

Currently, a total of 86 national PAs cover about 9% of the country and are classified in one of six categories: Strict Nature Reserve (2), National Park (3), Natural Monument (67), Nature Park (12), Protected Landscape (1) and Multipurpose Area (1). The National Parks Mavrovo (over 75,000 ha), Galicica (over 24,000 ha), Pelister (over 17,000 ha), and Multipurpose Area Jasen (around 27,000 ha) are quite large, while monuments of nature are extremely small, often less than 1 ha. The three national parks are managed by separate state-owned public enterprises. Some municipalities are responsible for managing the 5 natural monuments, two NGOs are managing the natural monuments Kuklica and Slatinski Izvor. A public enterprise manages Multipurpose Area Jasen. The remaining PAs have no management entities. Most PAs are in western North Macedonia, but work is underway to designate new PAs and identify Natura 2000 sites in the eastern part of the country. More details on the major protected areas are given in Annex E and presented on a map in Annex I.

In addition to PAs, there are 22 internationally recognized Important Bird Areas (Birdlife International, online, 2019), 42 important plant areas (Plantlife, 2019 online), and 8 Prime Butterfly Areas (Van Swaay,

2003). Two Ramsar Wetlands sites have been recognized in North Macedonia: Lake Prespa and Dojran Lake (Ramsar, 2019 online). There is one mixed natural and cultural UNESCO site, Ohrid Lake.

Efficient management of PAs is a great challenge. The main obstacles to the more efficient achievement of the goals of PAs include insufficient capacity of entities mandated with the management of these areas. Management plans have been prepared only for the national parks and a few other areas.

Funding of PAs is also a great challenge because no resources are allocated from the state budget and thus PAs are self-financed, largely by the extraction of timber resources. No general comprehensive economic study has been conducted of the economic potentials of PAs in North Macedonia.

3.5 STATUS AND MANAGEMENT OF KEY NATURAL RESOURCES OUTSIDE PROTECTED AREAS

The key natural resources outside PAs are managed by different ministries and public institutions as well as concessionaires (hunting and fishing areas, use of water, etc.) through implementation/enforcement of relevant national legislation (Table 3.1).

TABLE 3.1 OVERVIEW OF STATUS OF THE NATURAL RESOURCES OUTSIDE PROTECTED AREAS

Land Cover Type	Relevant Legislation	Responsible Institution	Major Direct Threats	Economic Potential If Effectively Conserved
Forests	Law on Forests	Forestry Directorate in the Ministry of Agriculture, Forestry and Water Economy; PE National Forests	Unsustainable logging, Illegal logging, forest fires	Timber production, non-timber forest products, erosion control, tourism, carbon sequestration, climate change regulation, water potential regulation
Agricultural land	Law on Agricultural Land	Agriculture Directorate in the Ministry of Agriculture, Forestry and Water Economy	Abandonment of traditional agricultural practices, depopulation of rural areas	Food production, raised land values, retaining and promoting biodiversity, carbon sequestration
Pastures	Law on Pastures	Public Enterprise for Pastures	Depopulation of rural areas, decrease of livestock, changing grazing practices	Livestock breeding, rural (farm) tourism, maintained old breed domestic animals
Scrub and/or herbaceous vegetation associations	Law on Forests	Forestry Directorate in the Ministry of Agriculture, Forestry and Water Economy	Habitat destruction	Threatened species, non-wood products (berries)

Land Cover Type	Relevant Legislation	Responsible Institution	Major Direct Threats	Economic Potential If Effectively Conserved
Inland water and water bodies	Law on waters	Water Sector in the Ministry of Environment and Physical Planning; Water directorate in the Ministry of Agriculture, Forestry and Water Economy	Pollution (solid waste, waste waters), agricultural runoff, habitat modification, construction of hydro-power plants	Clean and drinkable water, crops irrigation, tourism, fisheries,

Based on the Law on Nature Protection (2004), the lists of strictly protected and protected wild species of plants, fungi and animals and their products were adopted in 2012 aiming to ensure protection of these important species throughout the country (not only within the PAs). Collection and trade of threatened and protected wild species of plants, fungi and animals and their parts require a license issued by the Ministry of Environment and Physical Planning (MEPP).

The game in North Macedonia is owned by the state and there are 133 game species managed that are divided into two categories—protected and unprotected game. The protected game has an established closed season and temporary or permanent hunting prohibition. There is a list of species considered as pests which can be hunted during the whole year. They include species with high conservation value, such as the wolf and the pine marten. Allowing hunting of these species is a clear contradiction with the principles of the sustainable hunting and European Union conservation legislation. There are 256 hunting territories covering the whole territory of North Macedonia (Velkovski and Nikolovski, 2015), out of which five are state owned, and the rest are given under concession.

The Law on Nature Protection stipulates formation of a national Ecological Network. In 2011, a map of the national ecological network (MAK-NEN) was produced identifying ecological corridors of large carnivores and restoration areas connecting the existing core areas of national importance (Brajanoska et al. 2011). The implementation of the national ecological network will contribute to the fulfillment of the obligations deriving from different multilateral agreements and implement the standards of the European Union in nature protection. There is also an ongoing initiative for identification of High Nature Value Forests in North Macedonia which should help in their conservation.

IV. VALUE AND ECONOMIC POTENTIAL

4.1 VALUE OF BIODIVERSITY

Ecosystem services are the benefits humans receive from the functions and processes of ecosystems. Biodiversity provides the foundation for ecosystem services, as it plays a critical role in both the provisioning of ecosystem services as well as their maintenance over time (Harrison et al. 2014). In North Macedonia, biodiversity supports the ecosystem service benefits provided by forests, agriculture, fishing, hunting, non-timber forest products, tourism and other recreational services.

The forests in North Macedonia cover 40% of the territory (roughly 1 million hectares). While these forests provide many important ecosystem services, these areas are most commonly valued only based on the timber and firewood extracted from them. The total timber reserves in North Macedonia are calculated around 87 million m^3 and the annual cut is officially around 47% of the total annual growth (1 970 000 m^3) (PE Macedonian Forests, online). In the last five years the commercial market price for timber is 40-50 Euros per m^3 (State Statistical Office, 2017). According to the Institute of Forestry in Skopje, as much as 500,000 m^3 of timber per year stay uncounted because of the illegal cutting by a sector unofficially known as the "timber mafia", amounting to around 20 million Euros per year. Other forest values, such as ecosystem services, tourism, and cultural values, are not calculated or valued at this time in North Macedonia. Some ongoing studies are now trying to calculate the value of forests not only by the timber potential, but also for other categories of ecosystem services too. The results of these studies may help in changing crucial policy decisions and, among other things, may convince the government to support the three national parks in ways other than timber cutting.

North Macedonia has no seacoast and the production of fish in this country includes commercial fishing from lakes and rivers and aquaculture production, mostly for use in-country. Aquaculture production, mostly for trout, carp and catfish, occurs at 107 fishery facilities in the Register of Fish Breeders kept by the Ministry of Agriculture, Forestry and Water Economy (MAFWE). Records of aquaculture and commercial fish production for recent years are presented in Table 4.1. Recreational fishing with licenses is also common, resulting in about 120 to 140 tons of all fish species caught annually.

TABLE 4.1 FISH PRODUCTION IN NORTH MACEDONIA

Type of Fish	2015 (total kg)	2016 (total kg)	2017 (total kg)
Trout	822,205	1,142,840	1,128,413
Carp	381,400	513,819	588,887
Sheatfish	521	3,207	4,747
Eel	794	905	914
Other fish	106,005	130,953	85,946

Source: Macedonia State Statistical Office, 2017

Hunting is another use of biodiversity in North Macedonia. There are 256 hunting sites across the country, 112 of which are for big game, and 144 of which are for small game. Hunting permits are required for most small game species. Hunting tourists also visit North Macedonia to shoot chamois, wild boars, deer and other big game and pay a large premium to hunting associations for their trophies.

Non-timber forest products (NTFPs) are also collected in North Macedonia for family use, for sale in local markets, and for export. There are no data, however, on the value of this industry. Despite a lack of information on the existing market, there is a large potential export market for these products. While limitations would be placed on NTFPs derived from threatened species, unlimited quantities of North Macedonian NTFPs derived from not threatened species can be sold.

Biodiversity also provides significant value to North Macedonia through its support of tourism and other recreational activities. Rural and mountain tourism, especially, need to be prioritized to restore vitality to rural areas. Development of tourism in these areas provides job opportunities for people to economically benefit from the nature around them and to do so in ways that do not involve further extraction of resources.

4.2 ECOSYSTEM GOODS AND SERVICES

The concept of valuing non-market ecosystem services in North Macedonia has been given limited attention, but a few studies have addressed these issues. A study entitled "Valuation of natural values of Shar Planina and estimation of their market value" (Melovski & Hristovski, 2008) is the first known instance of the valuation of non-market ecosystem services in the country. Using the survey-based method of "contingent valuation", the economic value of natural resources on Shar Planina Mountain was estimated at € (euros) 3,200,689. This value represents the sum that the residents in the cities and villages around the mountain are willing to pay annually for the protection and improvement of the state of the environment of the Shar Planina.

Another study, financed by a UNDP/GEF/MEPP project for the protection of the Prespa basin ecosystem, estimates the economic values of ecosystem services in Ezerani Nature Park (Ceroni 2013). The study shows that the annual sum of all tangible benefits from Nature Park Ezerani amounts to roughly €225,000. This sum includes the value of fishing within the borders of the Park (€22,200), sand collection (€182,000), hay for feeding sheep (€9,200), educational visits (€7,000), research (€2,400), and wildlife viewing (€1,800). One valuable ecosystem service that was not considered by this study is the contribution of the area to the natural re-stocking of the Prespa Lake. More specifically, based on expert opinion, artificial restocking could at the most cover one fifth of one single species in the lake at a cost of €32,993 annually, a cost that is avoided due to the provision of this service by the park.

The value of ecosystem services is being increasingly recognized in North Macedonia and is part of two recent key documents: the National Strategy on Nature Protection (MEPP, 2018b) and the National Biodiversity Strategy and Action Plan (MEPP, 2018a). These documents were both formally presented by the Minister of the Environment on International Biodiversity Day when this analysis team was in Skopje. Additionally, the Macedonian Ecological Society (MES) is currently working with MEPP and the private company Pharmachem on developing a detailed map of all types of ecosystems following the Mapping and Assessment of Ecosystems and their Services methodology of the European Union. This project aims to help select areas where payment for ecosystem services schemes can be established.

V. LEGAL FRAMEWORK AFFECTING CONSERVATION

5.1 NATIONAL LAWS, POLICIES, AND STRATEGIES

National resources, flora and fauna are defined as goods of public and as such enjoy special protection under the Constitution of the Republic of North Macedonia. An impressive amount of national legislation has been developed particularly within the framework of the accession process to the EU where the environmental sector is one of the main pillars. Some of the most important laws and policies covering biodiversity are described here.

The **Law on Environment (2005)** is a framework law that regulates the protection and promotion of the environment for ensuring the right of citizens to a healthy environment including biological diversity.

The **Law on Nature Protection (2004)** regulates the protection of nature through protection of biological and landscape diversity and protection of natural heritage within and outside of PAs. Since its adoption, the Law of Nature Protection has been amended on many occasions while many of the by-laws are not adopted, making it very difficult to implement. Because further harmonization of EU acquis is required, during 2017-2018, MEPP drafted a new law that is planned to be adopted by the end of 2019.

The use of natural resources for economic purposes and land use is also regulated by the provisions of a number of sectoral laws presented in Annex G. Separate laws regulate the implementation of the National Spatial Plan. Further efforts are needed to integrate biodiversity protection principles in legislation and policy documents of other relevant sectors.

There is general agreement among the experienced local analysis team members and confirmation from other stakeholders interviewed that existing legislation provides a solid base for biodiversity conservation. However, the enforcement level is not satisfactory, and its effectiveness has been modest due to weak implementation capacities at all levels of government, poor inter-sectoral cooperation, and low level of political will. The limited capacity of enforcement is related to the limited number of nature inspectors as well as other relevant inspectors. Enforcement is further hampered by low public awareness and media interest in environmental offenses, as well as weak legal processes which result in illegal actions not being adequately punished.

The two most important strategic documents—National Strategy for Nature Protection (2018-2028) (MEPP, 2018b) and National Biodiversity Strategy and Action Plan (2018–2023) (MEPP, 2018a)—were adopted in 2018 and promoted during an event celebrating International Biodiversity Day on May 22, 2019. They give a modern vision towards nature and biodiversity protection. Implementation of the Action Plan requires joint efforts and strong involvement of all relevant stakeholders in the country.

5.2 INTERNATIONAL AGREEMENTS

North Macedonia is a party to the major international agreements, treaties, and conventions related to biodiversity including the Convention on Biological Diversity (CBD), the Ramsar Convention on Wetlands, the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Trade in Endangered Species (CITES), and the Convention for the Protection of the World Cultural Natural Heritage (UNESCO).

North Macedonia is also a party to a number of European conventions and agreements, including the Convention on European Wildlife (Bern Convention), the Convention on Migratory Species (Bonn Convention), the Agreement on the Conservation of Bats in Europe (EUROBATS), the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), Convention on Access to Information, and the Public Participation in Decision-making and Access to Justice on Issues related to Environment (Aarhus Convention).

In general, North Macedonia lacks the capacity to fully comply with these treaties. The responsible ministry - MEPP - has limited staff and few resources beyond what is provided by donors. Donors have

focused in recent years on funding activities to comply with the Convention on Biological Diversity and various EU initiatives, but these efforts are non-sustaining once the donor money dries up. Details of North Macedonia's compliance with these conventions is presented in the table in Annex H.

5.3 GOVERNMENT AGENCIES

There are two levels of government in North Macedonia—the national and the municipal level. Even though the decentralization process started in 2005, very few obligations related to nature conservation and sustainable use of natural resources have been transferred to the municipal level.

MEPP was established nearly twenty years ago. A part of it is the Administration of Environment with five sectors, including the Nature Protection Unit where most biodiversity activity is conducted. It performs tasks relating to policy making; enforcement of national legislation; multilateral agreements; preparation of strategic documents related to PAs, threatened species, supervision of the work in PAs; and many other functions. This sector also issues permits for collection of protected species, CITES certificates, expert opinions on illegally built structures, urban planning documents, and more. The current capacity of the Nature Unit is not sufficient to fulfill these tasks. There is a widely recognized need to establish an expert body for nature protection (e.g., Institute or Agency for Nature protection separate from permitting functions and administrative procedures). The Spatial Planning Sector of MEPP also implements policy and monitors the process of use/design of space in the country, with biodiversity implications including strategic environmental impact assessment.

The State Environmental Inspectorate (http://www.sei.gov.mk/index_en.asp) was established as a separate body in 2015 and includes specialized nature inspectorates. According to the analysis team's long-term engagement in the field and other stakeholder interviews, the capacity of this agency is not adequate to fulfill all legal requirements.

The Ministry of Agriculture, Forestry and Water Economy (MAFWE) is responsible for protection and sustainable use of forests and other forest products, regulation of hunting and fishing (Department of Forestry and Hunting, State Inspectorate of Forestry and Hunting), protection of agro-biological diversity (Department of Livestock Breeding, Administration of Seeds and Seeding Material), and other tasks.

Activities of other ministries like Ministry of Economy and Ministry of Transport and Communications, have an impact on the sustainable use of natural resources and are often better funded than MEPP. According to MEPP representatives, there is a low level of cooperation with other Ministries.

Protected areas have management authorities that differ by location. Public institutions established for management of the three national parks (Mavrovo, Galicica and Pelister) are the most important. A Public Enterprise was established for management and protection of 'Jasen' Multipurpose Area. Other institutions could be designated as responsible bodies for management of PAs—in most cases these are municipalities or in other cases, civil society organizations appointed as management bodies (NGO Izvor—Kratovo, NGO Ursus Speleos, etc.).

The Public Enterprises of Forest Management, Pastures and Water Management have mandates to manage their resources for profit. They are now facing organizational, capacity, and financial

sustainability challenges and their mandate of managing for forests/pastures/water utilization is not aligned with the EU standard of managing for nature protection and recreation.

At the local level, municipalities are responsible for setting up local policies, regulations on the protection of natural resources, developing local action plans, informing the public on the state of environment, implementing parts of the environmental impact assessment (EIA) process, and more. Local units of the MAFWE also have an important role. Public enterprises for water management and public enterprises for communal affairs are the most important players at the local level. Local institutional capacities for nature conservation are weak. During the analysis team's interviews, it was proposed to appoint specific staff (a biologist) in the centers for development of planning regions to mitigate this problem.

5.4 OTHER ORGANIZATIONS AND INSTITUTIONS

The scientific, educational and academic framework in the country is well developed. The oldest and largest university, Ss. Cyril and Methodius University in Skopje has Faculties of Natural Sciences, Forestry, and Agricultural Sciences and Food, all with considerable biodiversity programming. Recently established programs in ecology are now in place in other universities like Tetovo University and University 'Goce Delchev'—Shtip. Unfortunately, the number of students has decreased in the last years—those with good knowledge and skills are leaving the country, and the ones that stay face limited employment options. Other major academic institutions include the Macedonian Academy of Sciences and Arts, the National Institution Macedonian Museum of Natural History, and the Hydrobiological Institute in Ohrid, all with considerable biodiversity expertise.

Several non-governmental organizations have experience in biodiversity conservation activities. The largest, most active biodiversity-related NGO in the country is the Macedonian Ecological Society, with a large staff of biologists, capacity to handle donor funding, and a mandate to work with the government, academics and other NGOs on biodiversity activities. Other active NGOs include Eko Svest, Front 21/42, BIOECO, Ursus speleos, Balkan Foundation for Sustainable Development, Connecting Natural Values and People Foundation, Movement of Ecologists in Macedonia. Their activities range from research and monitoring of biodiversity, public-awareness raising, education, advocacy, managing PAs or support of management bodies. Most activities lack funding and capacity for larger-scale efforts.

In addition, some private companies have taken a role in biodiversity conservation. Pharmachem is responsible for coordination of the Helvetas Swiss Intercooperation conservation program (known locally as the Swiss Nature program) promoting ecologically sustainable agriculture and ecotourism in the region around the Bregalnica River and working with other partners on the development of an ecosystems map. Also, small and medium buyout companies are establishing a system of sustainable use of NTFPs and pilot testing of identified quotas.

5.5 CONSERVATION INITIATIVES: GAP ANALYSIS

Nature protection is a multi-sectoral issue that requires high coordination and collaboration between responsible ministries for environmental affairs and many different sectors such as forestry, agriculture, transport, energy, tourism, etc. Insufficient inter-sectoral coordination and cooperation, as well as overlapping responsibilities, weak communication, lack of capacities at national and local levels, and lack of financial resources have been identified as main obstacles for implementation of the Convention on

Biodiversity at the national level. Usually the benefits acquired from biodiversity and ecosystem services are overlooked and undervalued by decision makers that lead not only to loss of biodiversity but have adversely affected environmental human health.

Activities for nature protection in the Republic of North Macedonia are to the greatest extent financed by foreign funds. These include 1) bilateral or multilateral donors; 2) EU funding and 3) international environmental funds such as Global Environment Facility, Critical Ecosystems Partnership Funds, or Prespa-Ohrid Nature Trust Fund. Many of the donors' initiatives are supporting activities on a trans-boundary level or regional level (southeast Europe countries). Details of important donor funding activities are presented in Annex F.

During the analysis team's interviews, several donors mentioned the importance of long-term, continuous projects, not just those with a three- to five-year window, in order to achieve the planned results. In this regard, Prespa-Ohrid Nature Trust Fund (PONT) was established as a transboundary programme for at least 20 years. Another lesson learned is that donor-funded projects are more sustainable if they are implemented by national/local institutions involving national experts as much as possible, giving people a sense of ownership of the projects. Projects implemented by foreign organizations are sometimes not well accepted by locals and do not result in sustainable outcomes.

Some donors stressed the importance of involving and training local experts as much as possible. However, in the last few years, many different biodiversity conservation activities from different donors have been initiated in the country. Collectively, these activities exceed the absorption capacity of qualified people to carry out the work. Even though many projects in the last 10-15 years were concentrated on the training of students/experts/local people, the country is facing a high rate of outflow of trained experts.

Coordination of different donors has improved in the last years according to the local analysis team members with decades of involvement with conservation in North Macedonia. There is now a Special Donor Assistance Database within the Secretariat for European Affairs where all foreign projects implemented on a different level and by different institutions/organizations should be registered. The EU Delegation encouraged establishment of a sector working group, but only a few meetings have been organized so far. The Nature Sector in MEPP also tries to undertake donor/project coordination aiming to streamline the financing of the priority biodiversity conservation activities.

The Government of the Republic of North Macedonia allocates very small funds to biodiversity from the state budget and this varies from year to year. Through the annual Environmental Investment Programme, MEPP awards funds to implement environment activities including support for scientific research work and public awareness raising and education. Beneficiaries of these funds are municipalities or associations of municipalities, legal and natural persons, NGOs, universities and other scientific institutions, management bodies of PAs. A separate budget line allocated for nature protection is established this year for the first time with very modest funds for the Nature Unit in MEPP.

Although capacity building is included in most of the on-going initiatives, there are still large capacity development needs across government and non-government institutions in charge of biodiversity. These range from strengthening capacity for research and data management to policy making and enforcement. Governmental institutions would benefit from technical assistance in policy development and improved cooperation between different ministries and other relevant institutions and NGOs as well as

sustainable financial mechanisms for conservation (planning documents are in place but need implementation).

VI. THREATS TO BIODIVERSITY

Threats to biodiversity are often classified into two types: direct threats and indirect threats (or drivers). Direct threats are the most visible in the field and are defined in the Foreign Assistance Act Sections 118/119 Tropical Forest and Biodiversity Analysis: Best Practices Guide (USAID, 2017) as "a human action or unsustainable use that immediately degrades biodiversity". The drivers behind them are the institutional, political and economic factors that fuel these direct threats. Drivers are the most likely access points for donor and government interventions.

Two primary sources were used to categorize the threats to biodiversity in North Macedonia: the various Macedonian government contributions to the Convention on Biological Diversity (CBD) (MEPP, 2014 and 2018a) and the previous USAID/Macedonia Biodiversity Analysis (FAA 119) (USAID, 2010). Other sources include published documents and websites from related stakeholders. Based on fieldwork, team knowledge, and in-country consultations, the analysis team consolidated and refined the present direct and indirect threats into the lists below.

6.1 DIRECT THREATS TO BIODIVERSITY

North Macedonia, like most countries, has numerous direct threats to biodiversity. The 2010 USAID/Macedonia Biodiversity Analysis (FAA 119) identified a number of direct threats that are still in effect today. The following list incorporates these threats and details others that are of current significance as well. The NBSAP (MEPP, 2018a) includes a list of threats analyzed in accordance with the existing EU classification of threats used by Member States (for reporting under Article 9 of the Habitats Directive). The analysis team preparing this report analyzed 249 threats based on (1) geographical distribution, (2) scope, (3) intensity, (4) urgency and (5) reversibility of threat and developed a list of 17 highest-priority threats. No attempt was made to further prioritize these major threats. The analysis team also conducted nearly 30 stakeholder interviews to identify the main threats relevant to their programs. These threats have been grouped into ten main categories as described below.

1. CONVERSION OF NATIVE HABITATS

North Macedonia has a number of threats attributed to the conversion of native habitats. Housing, infrastructure projects, hydropower dams and other development schemes are taking their toll on natural ecosystems. Around Lake Ohrid, the analysis team saw several hotels being constructed close to the lake on supposedly protected shoreline marshes. This new construction was, reported by local stakeholders to have inadequate wastewater treatment facilities. Swampy habitats (Struga Swamp, Monospitovo Swamp, Studenchishta Swamp, Belchishte Swamp and Katlanovo Swamp, etc.) are under continuous pressure. Destruction of swamp vegetation, conversion of fallow lands to agricultural lands, encroachment on beaches by platforms and parking places, and industrial dumpsites were observed in Studenchishta Swamp near Ohrid Lake. Wetlands near the village Negorci are being destroyed due to an altered hydrological regime and the construction of a touristic complex that has nearly wiped out swamp sawgrass (*Cladium mariscus*) (MEPP, 2014). During the construction of Kozjak hydro power plant, in the lower course of the River of Ocha, several populations of the endemic plant *Thymus oehmianus* were destroyed. Numerous occurrences of the endemic species *Viola kosanini* e. were devastated and

fragmented during the construction of the access road between the village Nova Breznica and the dam of Kozjak. Even within PAs, roads, infrastructure (e.g., gas pipeline I Vodno Protected Area), and expanded tourism facilities like hotels and restaurants (i.e., Matka Canyon Monument of Nature, Tikvesh Lake Strict Nature Reserve, Ohrid and Doyran Lakes Monument of Nature) are being built at to the expense of the natural areas and associated biodiversity.

2. AGRICULTURAL PRACTICES

A number of agricultural practices in North Macedonia are threatening natural habitats and native species. Heavy use of artificial fertilizers and natural manure flowing into the waterways encourage eutrophication from excessive algal growth, which lessens light penetration in waterways, harming native plants and causing die-offs of fauna (MEPP, 2018a). According to local stakeholders, these effects are becoming more evident in the ancient lakes of Prespa and Ohrid and elsewhere around the country. Changing grazing practices are also having a negative effect on biodiversity. Traditional grazing has maintained pastures and meadows and the endemic plant species that have evolved in them. As farmers move to the city, abandoning these pastures, shrubs and various invasive species have taken over much of the previous pasturelands. Agricultural expansion (intensification) has also modified the landscape, shifting from small farms with trees and shrubs and wildlife habitat to large more industrial monocultures of crops with less biodiversity. Areas with endemic and protected salt-tolerant (*halophytic*) plants around Ovche Pole are plowed over and gradually converted into areas on which agricultural crops are cultivated or through which agricultural machines pass to reach adjacent areas under agricultural crops. In this way, even small areas with halophytic vegetation are irreversibly lost (MEPP, 2014).

3. FIRE

Although fire converts habitats and is often a result of agricultural practices, the importance of fire to the conservation of biodiversity needs consideration. Most fires in North Macedonia are caused by humans, either accidentally or intentionally. North Macedonian law enables the practice of cutting remaining trees after a forest fire, and thus some fires are set primarily for this purpose. Burnt forests also increase habitat for mushroom collection. Another primary factor in human-caused fires results from the loss of grazing animals described above. Herders set fires to reduce the intrusion of shrubs into pastureland, and farmers are using this technique to burn the stubble. Unfortunately, many of these anthropogenic fires are uncontrolled and spread into the forests and PAs, causing widespread damage to forest ecosystems and the species living there.

According to data collected from the North Macedonia State Statistical Office (online) and annual reports from Public Enterprise Macedonia Forests (2016, 2017), 4,034 forest fires occurred between 1999 and 2017. These data sources describe the damage to timber, the effects on young plantations, and the damage to the productive function of the forests. The total burned area in this period was 171,488 ha of the country territory, including national parks, and the total volume of burnt timber is 1,838,245 m^3. Besides these direct damages, the forests protective functions (against erosion, floods, regulation of the level and the quality of water regime, etc.) and general benefits (positive influence on the climate, producing oxygen, harboring biodiversity) degrade.

TABLE 6.1 DAMAGE TO FORESTS

Year	Forest Fires (ha)	Insects (m^3)	Natural Disasters (m^3)	Illegal Logging (m^3)
2003	1 922	3 267	-	-
2004	1 798	1 072	-	-
2005	3 093	4 946	-	-
2006	3 594	5 515	-	-
2007	34 443	1 823	-	-
2008	15 046	1 643	42 717	7 164
2009	1 030	12	13 597	6 062
2010	3 283	3 513	1 743	11 557
2011	8 702	327	2 211	25 189
2012	19 312	-	20 584	26 239
2013	2 844	477	870	25 942
2014	1 150	1 267	1 063	2 5230
2015	3 165	1 533	506	2 2054
2016	2 166	637	88	18 662

Source: Public Enterprise Macedonian Forests (2016, 2017) and State Statistical Office of the Republic of Macedonia, online.

Thermophilic oak forests and shrubberies characterized by high biodiversity, and coniferous forests are particularly affected. These fires often pose a real risk to PAs. For example, a stand of old-age black pine in Cham Chiflik near Strumica was burned in 2012. Fires have also been recorded in the three National Parks (Mavrovo, Galicia and Pelister), Multipurpose Area Jasen, and Nature Park Ezerani.

4. ALTERATION TO FLOW REGIMES OF NATURAL WATERWAYS

Flood-prevention measures that regulate rivers have disrupted or disconnected many of the floodplains that provide crucial spawning grounds for fish and habitats for migratory and nesting bird species and a range of threatened plant species. Excessive removal of water for irrigation is also a threat to natural habitats. Small hydropower projects are currently of great concern to conservationists, with about 400 existing and/or planned projects throughout the country (Macedonia Small Hydropower Project, online, 2019). Both large and small hydropower plants along streams and rivers impede the movement of fish and other species, and changes in flow and substrates caused by dams and other infrastructure disrupt spawning areas for native species and provide a foothold for invasive aquatic species. Thanks to the work of NGOs, a number of these projects have been stopped in official PAs, but some proposed

Natura 2000 sites are not yet officially recognized—a long process—and small hydropower projects continue to be developed. Although taken one by one, these small projects may have little effect, the cumulative effect leads to extensive disruption of natural habitats while producing relatively minor contributions to the natural power supply.

5. TIMBER AND FUELWOOD EXTRACTION

Forests are the foundation of much of Macedonia's biodiversity. Timber and firewood harvests in North Macedonia are regulated by law and are primarily managed by the Macedonia Forests Public Enterprise, which controls about 80% of the forests in the country. This agency only concerns itself with the production of wood resources and the management of NTFP and has no program to conserve or protect other forest species. Forest managers are only trained in traditional forestry practices without consideration of biodiversity. Nurseries primarily focus on growing non-native tree species for replanting efforts—often to reduce erosion. Organized illegal logging, primarily for the sale of fuelwood, has been an issue since 1995. Experts interviewed for this report have described a current "mafia" involved in the illegal trade in fuelwood and timber. Based on in-country use of fuelwood, more than 500,000 m^3 of harvested timber is unaccounted for every year—the current equivalent of about 20 million euros per year.

6. MINING

Mining causes a number of threats to biodiversity, including habitat conversion, silt and mine effluents entering waterways, changes in groundwater levels, and noise disturbance for wildlife. Toxic tailings from closed mines still litter the landscape in some areas, resulting in water pollution and contaminated soil. In addition to existing copper, lead, zinc, chromite, manganese, nickel, and gold mines, more mines are under consideration, and little regard is given to the ecological importance of the proposed mining sites and the potential environmental consequences.

Open cast mining causes permanent loss of habitats for several important species associated with marbleized limestones, especially for plants ("marble flora") and invertebrates. For instance, a large area has been awarded to a marble mining concession in the wider surroundings of Prilep, an area well known by its endemic plants such as *Stachys iva*, *Seseli vandasii*, *Armeria vandasii*, *Centaurea kozjakensis*, *Silene prilepensis*, *Allium bornmulleri*, and many others. Similar conditions occur in the site of Alshar, where several local endemic species grow, such as *Viola arsenica*, *Viola allchariensis*, *Thymus alsarensis*, *Centaurea leucomala*, *Onobrychis degenii*, *Knautia caroli-rechingeri* and several more, which are under threat by planned future mining activities (MEPP, 2014).

7. OVEREXPLOITATION AND ILLEGAL HARVEST OF PLANT AND WILDLIFE SPECIES

Policies and laws exist to control overexploitation of plant and wildlife species, including regulations on bag limits, hunting seasons and license requirements, but these are not always followed. Also, overlapping or unclear responsibilities of relevant institutions exist creating further confusion. In some cases, such as the collection of NTFPs, licenses are given to collect certain amounts, but there are no on-the-ground data to form reliable quotas. Poaching of wildlife is significant in some areas. Trapping brown bears, roe deer and other game species using foot snares is a serious problem, especially in the most south-western parts of the country bordering with Albania. Illegal use of poison baits for predators still occurs and has led to a serious decline in Egyptian and Griffon vulture populations in North

Macedonia. There is also incomplete compliance with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) mandates regarding export of endangered species, disposition of confiscated animals, and other issues in North Macedonia.

8. AIR AND WATER POLLUTION

Air and water pollution are often seen in terms of human health, but they are a serious problem that also affects species diversity and ecosystems. Many fish and aquatic invertebrates are impacted by polluted water, and even those that survive may bioconcentrate heavy metals and other pollutants affecting species that feed on them. Pollution from fertilizers and pesticides from agricultural crops compounds this problem. Proper wastewater treatment facilities are lacking throughout much of the country, and obsolete landfills of solid waste continue to pollute the waterways and air throughout the country. Burning of fuelwood is still the main source of heat for more than 80% of the population, producing high levels of air pollution. This pollution has resulted in Skopje being one of the most air polluted city in all of Europe (United Nations Environment Program [UNEP], 2018).

9. INVASIVE, NON-NATIVE SPECIES

Like most countries, North Macedonia is faced with the introduction of a number of exotic and invasive species of plants, animals and pathogens. Invasive species include those intentionally released for presumed benefits, like fast-growing fish species for fish ponds, released exotic pets, and some ornamental plants. Many exotic species of fish have been intentionally introduced, but little is known about their effect on native species. One food fish species widely introduced is the common carp (*Cyprinus carpio*), which churns up sediment when it feeds, thus altering the habitat for native aquatic plants (Invasive Species database, online, 2019). Non-native species of trout are also thought to be competitors of the protected Lake Ohrid trout, although no data are available. Many more exotic species are inadvertently introduced through global trade. Established invasive plants species continue to spread into disturbed natural areas where they can find a foothold. Non-native insects and pathogens are also a threat to crops and wild ecosystems. For instance, the boxwood tree moth (*Cydalima perspectalis*), an Asian species, is killing boxwoods (*Boxus spp*), and the pine processionary moth (*Thaumetopoea pityocampas*) is spreading and killing large swaths of black pine (*Pinus negra*) trees.

10. CLIMATE CHANGE

North Macedonia has experienced increases in temperature, number of hot days, and rainfall variability, and reductions in average precipitation. These trends are projected to continue at an accelerated rate through mid-century (USAID/Macedonia, 2018). These changes may lead to an expansion of arid areas, increased risk of fires and erosion, reductions in snowpack (especially at lower elevations), and changes in runoff patterns. Resultant impacts on biodiversity include changes in species distribution (vertical and horizontal displacement, changes in phenology, especially for certain bird species), and even extinction of certain habitats (lowland marshes) and species (plant and animal species associated with mountainous, marshy and riparian habitats). A detailed study (MEPP, 2013), on the impacts of climate change on North Macedonia's biodiversity identified a total of 18 habitats, 58 plant and 224 animal species as vulnerable to the effects of climate change. Risks to North Macedonia's forests include an increased risk of forest fires, potentially changing the fire regime, which could dramatically alter ecosystem composition and function (USAID, Climate Risk Profile: North Macedonia, 2018).

North Macedonia's pure coniferous forest ecosystems are among the most vulnerable, as climate change narrows their ecological optimum, and they are also sensitive to forest fires (MEPP, 2018). The alpine belt is highly vulnerable to temperature increases, which could result in a total loss of the habitat and some species (MEPP, 2013). Reductions in rainfall and increases in temperature also threaten the vegetation and other species in refugial centers - considered very important for biodiversity in North Macedonia due to species richness, especially endemic and relict species. Some terrain and species, including communities within these refugial zones and the oak belt, are expected to benefit from the temperature rise. During the last decade, beech forest area expanded despite a tendency towards warmer and dryer summers as a result of extended growing seasons and increasing rates of atmospheric CO_2 (Bussotti et al, 2015). Wetland ecosystems are under threat, and projected climate change impacts (in combination with human impacts) are expected to have irreversible consequences on the functioning of these ecosystems as well as particular species and plant communities (MEPP, 2013). A study assessing the vulnerability of European freshwater ecosystems (18,783 catchments) indicated that biodiversity-rich ancient lakes of Ohrid and Prespa, are the most vulnerable wetland ecosystems to climate change (Markovic et al, 2017). Dramatic losses in both flora and fauna have been recorded during previous drought events and can be expected to continue as precipitation decreases and temperatures increase. Riparian habitats in the country are also under significant threat from changing climate conditions. Located primarily in the Varder valley, these habitats are vulnerable to both flooding and drought.

6.2 DRIVERS OF THREATS

Drivers (root causes) are factors that affect the conservation of biodiversity and natural resources and often involve institutional, economic and political influences. These drivers shape the direct threats visible in the field. The NBSAP (MEPP, 2018) and the last 2010 USAID/Macedonia Biodiversity Analysis (FAA 119) for Macedonia (USAID, 2010) agree on several drivers impacting biodiversity and natural resources. The analysis team used these references, current literature, in-country interviews and site visits, and their judgment in developing the drivers presented below.

1. LACK OF SUSTAINABLE BIODIVERSITY FINANCING MECHANISMS

In North Macedonia, as with most countries, there are inadequate funds to cover the requirements for biodiversity conservation, and the agencies involved are often among the least funded government arms. Currently, most of the biodiversity-related activities by the MEPP, NGOs and other entities are funded almost entirely by donors. Once these donor-funded projects end, most often the work ceases as well. New donor-funded projects often must begin activities from scratch. The Nature Conservation sector of MEPP, where most biodiversity policy activities are conducted, has just this year received a line item in the overall government budget for nature protection. While this is a minimal amount of funding, it at least raises the visibility of nature conservation. There is now some movement (some NGOs, MEPP and PAs) to support Payment for Ecosystem Services projects, but these efforts are still in early stages.

2. WEAK ENFORCEMENT AND IMPLEMENTATION OF EXISTING MECHANISMS

Weak implementation of the legislation is partially or fully responsible for 10 out of 17 top-priority threats identified in the NBSAP (MEPP, 2018a). There are a number of policies and laws addressing the management, harvest and utilization of natural resources in North Macedonian described in Chapter V of this Analysis, but there are lapses in law enforcement that still threaten biodiversity. Poaching and unsustainable harvests are still issues. Stakeholders interviewed mentioned that corruption, favoritism

and political motivations in the natural-resources sector complicate enforcement of illegal extractive actives and affect permits to build in environmentally sensitive areas, including mining permits Many stakeholders in academic, donor and NGO circles imply that the illegal harvest of wood is organized by a well-connected ring with complicity from various officials.

3. LACK OF CAPACITY IN BIODIVERSITY CONSERVATION EFFORTS

North Macedonia has several good universities and knowledgeable faculty, but student enrollment is shrinking. In fact, the Faculty of Forestry, Faculty of Natural Sciences and Mathematics, and the Faculty of Agricultural Sciences and Food of the University of Saints Cyril and Methodius, Skopje (North Macedonia's primary institute of higher learning) have employed no new faculty in the past eight years, and enrollment is declining. Those who do graduate cannot find suitable jobs within North Macedonia. Many attain higher degrees outside the country and never return. Those that do have jobs in this sector are faced with low salaries and non-supportive working environments, resulting in low employee retention rates. This constant turnover of staff results in training investments being lost. In addition, whenever there is a political change, whether at the national or local levels, political appointees with different mandates replace those with existing knowledge, and conservation efforts must be re-initiated (Republic of Macedonia, 2010).

4. LACK OF ACCESSIBLE AND SHAREABLE DATA

The recent National Assessment of Biodiversity Information Management and Reporting Baseline for Macedonia (German Corporation for International Cooperation [GIZ], 2018) summarized the availability and coordination of biological databases in North Macedonia. Basically, the Assessment found that, although much information exists, it is not accessible or coordinated in any meaningful way in the country. Without coordinated biodiversity data, successfully conducting biodiversity projects and research are difficult. Some of the recommendations made in this report have been initiated (again with support of GIZ), but additional efforts are needed.

5. LACK OF ADMINISTRATIVE AND MANAGEMENT COORDINATION

Biodiversity concerns largely fall under MEPP and reside in the Nature Conservation Unit. This unit, however, is understaffed, and most staff spend the bulk of their time performing administrative duties, permits, . and not in meaningful biodiversity programs. According to a number of stakeholders interviewed, although the new Minister of MEPP is open to listening about biodiversity, he has yet to follow through on any relevant actions.

Overlapping jurisdictions exist between various ministries. For instance, the Ministry of Agriculture, Forestry and Water Economy (MAFWE) and MEPP both claim jurisdiction over the management of NTFPs, and this presents a burden on companies and collectors (Connecting Nature Values and People [CNVP], 2019).

Other ministries, for example, the Ministry of Economy and the Ministry of Transport and Communications, have more power and finances and often make decisions counter to MEPP mandates. There is also a lack of coordination between local managers, regional offices and national entities, resulting in further stresses to biodiversity conservation initiatives.

6. INEFFECTIVE MANAGEMENT OF PROTECTED AREAS

Protected areas in North Macedonia fall into a variety of management categories, now in the process of harmonization with IUCN categorization of PAs (adopted in the Law on Nature Protection), as well as EU standards (Natura 2000 Network). Many protected area managers are political appointees that change with the elections, and few of these managers have any biological or conservation training. Protected areas are, for the most part self-supporting, with little backing from the government and some temporary investment from donors. Most PAs are primarily funded by extractive activities like logging and, to some extent, tourism. There is often little stakeholder input into these areas and very little, if any, conservation activities aside from those initiated by university students and faculty at their own expense. Beginning last year, some activities for strengthening management capacities of PAs are being supported by EU/ United Nations Development Program (UNDP) funding; however, long-term support is needed to attain good results.

7. POVERTY IN RURAL AREAS

In 2017, North Macedonia ranked 80 out of 188 countries in the Human Development Index which measures health, education and standard of living (UNDP, 2017, online) showing improvement in all categories since 2000. However, there is a high degree of rural poverty in North Macedonia, due primarily to the lack of income-producing activities in the region. Many people have left rural areas, and historical practices such as grazing that limit the expansion of forests and act to keep meadows (and the rare plants that live there) open have ended, and forests are taking over, reducing habitat for meadow-specific species. Poverty also is a factor for wastewater treatment, and individual households inadvertently add nitrogen waste into the environment. This leads to a build-up of algae in water bodies. When the algae die, a lack of oxygen results that kills fish and other aquatic species. Poverty may also lead to illegal extraction of biodiversity resources by rural residents, although this problem is viewed as less serious by various stakeholders interviewed.

8. LOW LEVEL OF AWARENESS OF THE IMPORTANCE OF BIODIVERSITY

Many North Macedonians are not aware of the importance of biodiversity and natural areas. However, due primarily to NGO efforts, this awareness may be increasing. The analysis team encountered some of these issues firsthand. For instance, a local tourist-boat driver in Lake Matka expressed his wish for more hotels and restaurants to be built in this area with the expectation that his own income would increase accordingly. Only when the team explained did he realize that the natural biodiversity in the area is what attracts visitors and ruining these resources would undermine the reason tourists come there in the first place. At the management level in North Macedonia, there is also a need to understand and demonstrate the economic value of biodiversity.

VII. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY

The actions necessary to conserve biodiversity in North Macedonia have been derived from document study, stakeholder interviews, site visits and the expert judgment of the analysis team. These actions all relate to the drivers and direct threats discussed in detail in the previous chapter. As is evident in Table 7.1 below, most of the direct threats are a result of multiple drivers that cumulative impact biodiversity in the country. The actions necessary in Table 7.1 represent actions needed in North Macedonia across

multiple actors. They are presented for stakeholder and donor consideration for incorporation into existing or new programs and/or policy development.

TABLE 7.1 ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN NORTH MACEDONIA AND LINKS TO DIRECT THREATS AND DRIVERS.

Drivers / Indirect Threats	Links to Direct Threats	Actions Necessary
Lack of Sustainable Biodiversity Financing Mechanisms	• Timber and Fuelwood Extraction; • Invasive, Non-native Species; • Overexploitation and Illegal Harvest of Plant and Wildlife Species; • Climate Change	• Increase opportunities and funding for scientists to work on applied biodiversity conservation activities • Increase capacity of NGOs, municipalities, PAs and others to seek and implement international funding sources for biodiversity conservation • Implement Payment for Ecosystem Services projects in PAs
Weak Enforcement and Implementation of Existing Mechanisms	• Conversion of Native Habitats; • Alteration to Flow Regimes of Natural Waterways; • Air and Water Pollution; • Overexploitation and Illegal Harvest of Plant and Wildlife Species	• Increase the capacity of inspectors in terms of number and expertise • Improve awareness in law enforcement agencies about biodiversity and relevant natural resources management laws • Strengthen judiciary practices related to wildlife and environmental crimes • Raise citizen awareness and knowledge of legal mechanisms related to environmental crimes • Make penalties for wildlife and environmental crimes commensurate with negative impacts
Lack of Capacity in Biodiversity Conservation Efforts	• Conversion of Native Habitats; • Alteration to Flow Regimes of Natural Waterways; • Fire; • Air and Water Pollution; • Invasive Non-native Species; • Overexploitation and Illegal Harvest of Plant and Wildlife Species; • Climate Change	• Promote environmental awareness programs that educate people about their own natural habitats and resources • Provide more suitable jobs for people with training in ecology and biodiversity conservation • Discourage the use of political appointees without appropriate training for biodiversity conservation jobs • Encourage stricter criteria and higher valuation for conservation related positions • Provide more training, equipment and updated technology for monitoring and biodiversity conservation activities

Drivers / Indirect Threats	Links to Direct Threats	Actions Necessary
Lack of Accessible and Shareable Data	• Conversion of Native Habitats; • Air and Water Pollution; • Invasive Non-native Species; • Overexploitation and Illegal Harvest of Plant and Wildlife Species; • Climate Change	• Apply international standards for storing and managing biodiversity data • Support government development of Red Lists of species and habitats • Support projects to inventory species and ecosystems • Establish a national biodiversity monitoring system with a collaborative mechanism to include all institutions that are now collecting biodiversity information
Lack of Administrative and Management Coordination	• Conversion of Native Habitats; • Agricultural Practices; • Alteration to Flow Regimes of Natural Waterways; • Mining; • Climate Change	• Encourage more exchange of information within and across sectors • Promote mainstreaming of biodiversity objectives into planning and strategies of other sectors • Integrate biodiversity concerns in policies and regulations of other sectors • Ensure that biodiversity concerns are incorporated into development and spatial planning at the local, regional and national levels • Strengthen biodiversity action plans with concrete recommended activities with measurable results • Establish a new Agency for Nature Protection to implement nature conservation work
Ineffective Management of Protected Areas	• Conversion of Native Habitats; • Timber and Fuelwood Extraction; • Fire; • Invasive Non-native Species; • Overexploitation and Illegal Harvest of Plant and Wildlife Species; • Climate Change	• Improve sharing of best practices among stakeholders • Strengthen capacities to develop and implement research and monitoring based management plans for PAs • Increase incorporation of ecologists in PA management • Diversify sources of financing for PAs • Restructure public enterprises and the MEPP and management authorities to achieve higher effectiveness of management of PAs • Clarify roles and responsibilities of government agencies involved in Pas
Poverty in Rural Areas	• Agricultural Practices; • Fire; • Timber and Fuelwood Extraction; • Air and Water Pollution; • Overexploitation and Illegal Harvest of Plant and Wildlife Species	• Provide incentives, training and opportunities for local people near PAs to provide services and handmade goods to visitors • Provide incentives, training and opportunities to sustainably harvest, process and market products derived from nature (e.g., honey, soaps, medicinal plants) • Provide more employment opportunities in rural areas

Drivers / Indirect Threats	Links to Direct Threats	Actions Necessary
Low Level of Awareness of the Importance of Biodiversity	• Conversion of Native Habitats; • Agricultural Practices; • Fire; • Alteration to Flow Regimes of Natural Waterways; • Air and Water Pollution; • Invasive Non-native Species • Overexploitation and Illegal Harvest of Plant and Wildlife Species; • Climate Change	• Support ecosystem valuation studies and promote the results to officials and the public • Raise the awareness of government officials on the long-term value of biodiversity conservation. • Support NGO outreach programs that raise conservation awareness among school children and the public • Raise the capacity of NGOs to do public awareness programs and share lessons learned

VIII. EXTENT TO WHICH THE MISSION MEETS THE IDENTIFIED ACTIONS NEEDED

USAID/North Macedonia is operating under a Strategic Framework 2018-2020 and is in the process of preparing a CDCS for 2020-2025. The new CDCS is not expected to differ substantially from the current framework, and biodiversity is not expected to be a focus of Mission programming. Under the operating Strategic Framework, USAID/North Macedonia has one DO: "Macedonia is a Prosperous, Self-reliant and Inclusive Democratic Society" with four IRs

- IR1: Increased private sector growth,
- IR2: Enhanced participation by informed citizens,
- IR3: Good governance strengthened, and
- IR4: Improved social cohesion.

The regional energy program Development of Regional Energy Markets (DREM) is also considered here. This report looks broadly at these activities and discusses the extent to which current activities meet the actions that are needed in the country and identified in the previous chapter. Possible threats to biodiversity by Mission programs were also considered in preparing this report but none were found in the present activities.

Recommendations for future Mission programs are presented in Chapter IX of this Analysis based on the assumption that the overall themes in place now will continue in the future CDCS.

8.1 BRIEF DESCRIPTIONS OF CURRENT USAID ACTIVITIES

IR 1: INCREASED PRIVATE SECTOR GROWTH

USAID is working to increase private-sector growth through a series of activities aimed at micro, small and medium-sized enterprises (MSMEs), such as assistance and partnerships with groups like chambers of commerce, business support organizations and local financial institutions. Focus is also on assistance

to improving inspection bodies and the inspection system through legislation, training and software enhancements.

IR 2: ENHANCED PARTICIPATION BY INFORMED CITIZENS

USAID is working to strengthen civil society by supporting more public participation in policy making and implementation and increasing the professionalism of independent media. Small grants are given to support public awareness and to engage government officials on issues of public concern.

IR 3: GOOD GOVERNANCE STRENGTHENED

USAID is working to build capacity in public entities in the executive branch, legislature, and the national elections process. Support is given to strengthen coordination between key ministries and agencies and the legislative and executive branches. Activities also support dialogue between government, civil society and private sector representatives in identifying and implementing needed reforms.

IR 4: IMPROVED SOCIAL COHESION

USAID is working with the government, schools, and others in the community to achieve better inter-ethnic cohesion among youths. Programs are underway to use media to demonstrate inter-ethnic cooperative activities among students, and sports and outreach activities are offered. USAID co-finances school renovations based on need and demonstrated progress in ethnic integration.

USAID REGIONAL PROGRAM: DEVELOPMENT OF REGIONAL ENERGY MARKETS (DREM)

DREM is working with the government of North Macedonia to comply with EU energy policies and regulations and to draft effective laws. The main goal is to establish a transparent and vibrant energy market that improves the energy services to households and industry.

8.2 "EXTENT TO WHICH" BY ACTIONS NECESSARY

TABLE 8.1 "EXTENT TO WHICH" BY ACTIONS NECESSARY

Actions necessary to achieve biodiversity conservation	Extent to which the current Strategic Framework and activities contribute toward actions necessary
A. Driver: Lack of Sustainable Biodiversity Financing Mechanisms	
Increase opportunities and funding for scientists to work on applied biodiversity conservation activities	USAID/North Macedonia does not now directly address these actions necessary
Increase capacity of NGOs, municipalities, PAs and others to seek and implement international funding sources for biodiversity conservation	
Implement Payment for Ecosystem Services projects in PAs	
B. Driver: Weak Enforcement and Implementation of Existing Mechanisms	

Actions necessary to achieve biodiversity conservation	Extent to which the current Strategic Framework and activities contribute toward actions necessary
Increase the capacity of inspectors in terms of number and expertise	USAID/North Macedonia does not now directly address these actions necessary
Improve awareness in law enforcement agencies about wildlife laws	
Strengthen judiciary practices related to wildlife and environmental crimes	
Raise citizen awareness and knowledge of legal mechanisms related to environmental crimes	
Make penalties for wildlife and environmental crimes commensurate with negative impacts	
C. Driver: Lack of Capacity in Biodiversity Conservation Efforts	
Promote environmental awareness programs that educate people about their own natural habitats and resources	USAID/North Macedonia does not now directly address these actions necessary
Provide more suitable jobs for people with training in ecology and biodiversity conservation	
Discourage the use of political appointees without appropriate training for biodiversity conservation jobs	
Encourage more strict criteria and higher valuation for conservation related positions	
Provide more training, equipment and updated technology for monitoring and biodiversity conservation activities	
D. Driver: Lack of Accessible and Shareable Data	
Apply international standards for storing and managing biodiversity data	USAID/North Macedonia does not now directly address these actions necessary
Support government development of Red Lists of species and habitats	
Support projects to inventory species and ecosystems	
Establish a national biodiversity monitoring system with a collaborative mechanism to include all institutions that are now collecting biodiversity information	

Actions necessary to achieve biodiversity conservation	Extent to which the current Strategic Framework and activities contribute toward actions necessary
E. Driver: Lack of Administrative and Management Coordination	
Encourage more exchange of information within and across sectors	USAID/North Macedonia does not now directly address these actions necessary
Promote mainstreaming of biodiversity objectives into planning and strategies of other sectors	
Ensure that biodiversity concerns are incorporated into development and spatial planning at the local, regional and national levels	
Strengthen biodiversity action plans with concrete recommended activities with measurable results	
Establish a new Agency for Nature Protection to implement nature conservation work	
F. Driver: Ineffective Management of Protected Areas	
Improve sharing of best practices among stakeholders	USAID/North Macedonia does not now directly address these actions necessary
Strengthen capacities to develop and implement research and monitoring based management plans for PAs	
Increase incorporation of ecologists in PA management	
Diversify sources of financing for PAs	
Restructure public enterprises and the MEPP and management authorities to achieve higher effectiveness in management of PAs	
Clarify roles and responsibilities of government agencies involved in PAs	
G. Driver: Poverty in Rural Areas	
Provide incentives, training and opportunities for local people near PAs to provide services and handmade goods to visitors	
Provide incentives, training and opportunities to sustainably harvest, process and market products derived from nature (e.g., honey, soaps, medicinal plants.)	USAID/North Macedonia does not now directly address these actions necessary
Provide more employment opportunities in rural areas	
H. Driver: Low Level of Awareness of the Importance of Biodiversity	
Support ecosystem valuation studies and promote the results to officials and the public	

Actions necessary to achieve biodiversity conservation	Extent to which the current Strategic Framework and activities contribute toward actions necessary
Raise the awareness of government officials on the long-term value of biodiversity conservation	USAID/North Macedonia does not now directly address these actions necessary
Support NGO outreach programs that raise conservation awareness among school children and the public	
Raise the capacity of NGOs to do public awareness programs and share lessons learned	

IX. RECOMMENDATIONS

9.1 RECOMMENDATIONS BASED ON ACTIONS NECESSARY TO CONSERVE BIODIVERSITY

In developing its new CDCS for 2020-2025 USAID/North Macedonia, the analysis team understands that the CDCS is not expected to focus on natural resources and biodiversity conservation and is expected to continue along current lines that focus on private-sector growth, informed citizen participation, strengthened good governance, and improved social cohesion. In addition, the regional energy program DREM is also expected to be part of the Mission's portfolio. The recommendations presented here reflect this understanding.

In the gap analysis of donor activities presented in Chapter V and the accompanying table in Annex F, it is evident there are many donor-supported biodiversity conservation activities already being undertaken in North Macedonia, and in fact various stakeholders have said that there is already an "absorption problem" with too few trained biodiversity specialists in the country to actively support these projects. Most projects are short term, but longer-term projects do often continue to keep the same experienced staff over time. Among the donors, USAID has a comparative advantage in addressing biodiversity-related aspects in democracy and governance programs, in media efforts, and in citizen awareness activities. Private-sector growth programs can also include more biodiversity-related activities. And the DREM activities need to be pursued with caution relating to potential impacts on the natural resources of the country. The recommendations for the Mission presented here build on these points.

Overall the analysis team recommends that USAID/North Macedonia considers biodiversity concerns in all of their programs and promotes mainstreaming of biodiversity objectives into the planning and strategies of other sectors thus helping to achieve the NBSAP targets (MEPP, 2018a).

The recommendations presented here stem from previous chapters in this report that looked at the status of biodiversity (Chapter III), its economic value (Chapter IV), the institutional framework (Chapter V), the main indirect and direct threats to biodiversity (Chapter VI), the actions needed to

address these (Chapter VII), and the extent to which USAID/North Macedonia already addresses them (Chapter VIII).

General overall recommendations for the Mission are presented in Section 9.2 with the general framework of the Mission in mind, but not directed at particular existing IRs. These recommendations have been broken into two groups: top priority and second priority, but the analysis team believes that all are important and could align with USAID/North Macedonia's programming. Those recommendations *in italics* easily fit within the current Strategic Framework, 2018 to 2020, with the existing IR presented in parentheses (also italicized in the chart in Section 9.3). The rest of the recommendations in Section 9.2 are deemed important by the analysis team and could well be addressed by the Mission if new IRs are included in the upcoming CDCS.

Finally, in Section 9.3, other specific recommendations that fit within current USAID IRs and activities are presented in a chart with categories of opportunistic, pro-active, and direct threat reduction as described in Table 9.1.

9.2 OVERALL RECOMMENDATIONS FOR USAID

TOP PRIORITY RECOMMENDATIONS:

1. Strengthen capacities of different actors to develop a suitable model for a sustainable financing mechanism for conservation of biodiversity and environment protection.
2. *Raise awareness and educate the government about the necessity and importance of biodiversity conservation for long term sustainability of North Macedonia's natural resources. (IR 3)*
3. *Strengthen ecotourism, production and sale of nature-related products and native agricultural products and other activities that can help in biodiversity conservation. (IR 1)*
4. Strengthen the capacity of relevant governmental environmental agencies and relevant faculties in biodiversity monitoring, data collection, and data sharing to establish a national biodiversity monitoring system.
5. *Strengthen the capacity of relevant inspectorates and the police to enforce laws and the judicial system to carry through with appropriate penalties. (IR 3)*
6. *Strengthen media efforts to promote more biodiversity conservation, not only waste management and air pollution issues which already receive attention in the press. (IR 2)*
7. Support efforts to incorporate biodiversity and natural ecosystem concerns into spatial planning and development at the local, regional and national levels.
8. Support capacity building and the development and use of local level conservation action plans that address financial sustainability.

SECOND PRIORITY RECOMMENDATIONS

1. Provide technical assistance to the government to develop policies and regulations that allow and support joint conservation measures among agencies, academic institutions and qualified nature-based NGOs.
2. Support a program that trains environmental lawyers and provides a hotline to report crimes and other measures that increase enforcement of nature protection laws.
3. *Support formal and informal education programs related to ecology and nature. (IR 3)*

4. Strengthen capacity of NGOs to conduct nature conservation-related activities like surveys, species studies and education/awareness programs in rural areas.
5. *Strengthen the capacity of and provide training for water, environment, agriculture, CITES and other inspectors in biodiversity-related matters. (IR 3)*
6. Support government efforts to mainstream biodiversity conservation in other sectors.

9.3 SECTORAL RECOMMENDATIONS BASED ON THE CURRENT RESULTS FRAMEWORK

TABLE 9.1 SECTORAL RECOMMENDATIONS BASED ON THE CURRENT RESULTS FRAMEWORK

Opportunistic: Working within the boundaries of programs to improve the extent to which the mission is meeting the actions necessary to reduce threats.	**Proactive:** Adapting programs to improve the extent to which the mission is meeting the actions necessary to reduce threats.	**Direct Threat Reduction:** Designing with an explicit objective of reducing threats or otherwise contributing to biodiversity conservation.
IR 1: Increased Private Sector Growth		
Provide grants from the Business Ecosystem Project to "green businesses." Strengthen NTFP businesses to abide by EU standards for export. Help support farming collectives focusing on rare genetic agricultural strains. Help support the network of Medicinal and Aromatic Plants (MAPs) collectors, growers and distributers. Develop incentives for private companies' involvement in management of urban natural spaces.	Support biological work on economically important plant species to establish sustainable quotas for harvest. Support government adoption and enforcement of quotas for economically important plants. Strengthen ecotourism, production and sale of nature-related products and native agricultural products and other activities that can help in biodiversity conservation. Support projects that investigate other ways to finance PAs beyond resource extraction (i.e., timber cutting).	Have a specific program strengthening NTFP and MAPs MSMEs and the government in supporting, accepting, specifying and enforcing sustainable quotas. Support the growing of MAPs to reduce the damage to natural stocks and include support for processing, value chains, organic certification, certification laboratories, and sale/trade mechanisms.

IR 2: Enhanced Participation by Informed Citizens		
Support more small grants to NGOs engaged in biodiversity conservation awareness activities. Include nature-based programming in media programs to raise awareness of the public and various agencies involved. Include 'citizen scientist' training in survey techniques to directly engage citizens in learning the importance of their environment and to provide data that can be used to guide development. Support small, regional NGOs working on public awareness of nature protection and the importance of biodiversity.	Support awareness and training for journalists in nature conservation issues. Support programs that increase local stakeholder involvement in PAs. Support programs that increase local stakeholder awareness and involvement in municipal nature conservation concerns. Create publicly accessible data on biodiversity nature and watersheds. Strengthen media efforts to promote biodiversity conservation and not just waste management and air pollution issues which already get more play in the press.	Support scholarships for college students engaged in ecology and conservation work. Support production of conservation programs for television and other media. Support formal and informal education programs related to ecology and nature.
IR 3: Good Governance Strengthened		
Include more conservation-based NGOs and local stakeholders in USAID governance initiatives. Support training for public prosecutors and judges to make them aware of issues regarding wildlife poisoning and killing. Strengthen the capacity and provide training for water, environment, agriculture, CITES and other inspectors in biodiversity related matters. Consider the common factors required for good governance and include some that can benefit biodiversity such as the control of illegal activities and corruption, issuance of permits, taxes, inspections, and functioning courts.	Develop programs that improve the capacity of citizens to engage in nature policy and key legislation. Encourage the government to financially support PA management authorities (currently self-funded). Support CITES training activities, monitoring and law enforcement of illegal exports and other programs to counter illegal trade. Strengthen enforcement of wildlife laws. Support inter-sectoral working group on wildlife poisoning and implementation of action plan.	Work with the government to address inconsistencies and overlaps in environmental legislation and implementation. Raise awareness and educate the government about the necessity and importance of biodiversity conservation for long term sustainability of North Macedonia's natural resources. Strengthen the capacity of relevant inspectorates and the police to enforce laws and the judicial system to carry through with appropriate penalties.

IR 4: Improved Social Cohesion		
Include bird calls and other biodiversity activities in Children with Visual Impairment Project. Include nature-related activities, like park clean-ups, volunteer monitoring programs and other such activities in social cohesion programs.	Develop nature-based programs and materials for use in social cohesion programs and in the schools. Develop nature monitoring programs, after school nature clubs and camps for multicultural teams.	Support urban nature programs and Citizen Science activities which encourage participation by people from different ethnic groups.
Development of Regional Energy Markets (DREM)		
Support policy work in the energy sector that focuses attention to "green rules" that are ecologically sound. Support the integration of renewable energy into the national system and moving from higher polluting sources to lower ones. Include ample climate adaptation elements. Raise awareness about the negative cumulative impacts on biodiversity and water systems by small hydropower plants.	Consider helping in the development of energy efficient stoves, air conditioning, etc. Ensure that strong, professional environmental impact assessments are conducted regarding the placement of gas lines across protected and sensitive natural areas.	Help spread gas lines into rural areas where the use of fuelwood is a large threat but ensure that pipelines do not negatively impact protected and sensitive areas. Provide other rural energy conserving options such as solar water heating, biogas, geothermal, maximum use of insulation, etc.

ANNEX A. SCOPE OF WORK

The scope of work detailing expectations and requirements for conducting this Foreign Assistance Act Section 119 Biodiversity Analysis is included on the following pages.

SCOPE OF WORK

FAA 119 Biodiversity Assessment for North Macedonia

March 11, 2019

I. BACKGROUND

As part of the documentation for the 2020-2025 Country Development Cooperation Strategy (CDCS), USAID North Macedonia is required by Section 119 of the Foreign Assistance Act, as amended, to prepare an analysis of biodiversity in the Republic of North Macedonia.

By mandating a FAA 119 analysis (hereafter referred to as the analysis), the U.S. Congress is recognizing the fundamental role that biodiversity play in sustainable development. Based on this analysis, USAID North Macedonia will define to what extent the CDCS will contribute to biodiversity conservation needs in North Macedonia. The analysis will assist in strengthening the Mission's role in biodiversity conservation by integrating biodiversity conservation in the CDCS.

1.1 SUMMARY OF RELEVANT PARTS OF FAA SECTION 119

FAA Section 119, as amended, requires that USAID operating units address the following:

FAA SEC 119 ENDANGERED SPECIES

COUNTRY ANALYSIS REQUIREMENTS. Each country development strategy, statement, or other country plan prepared by USAID shall include an analysis of:

1) the actions necessary in that country to conserve biological diversity, and

2) the extent to which the actions proposed for support by the Agency meet the needs thusidentified.

The FAA 119 analysis for USAID North Macedonia must adequately respond to the two questions for country strategies, also known as, "actions necessary" and "extent to which."

1.2 PURPOSE

The primary purpose of this task is to conduct an analysis of biodiversity in compliance with Section 119 of the FAA of 1961, as amended, and ADS guidelines such as ADS 201mav: Foreign Assistance Act Sections 118 and 119 Tropical Forests and Biodiversity Analysis.

A Mandatory Reference for ADS Chapter 201. The analysis will inform USAID North Macedonia in the development of the North Macedonia CDCS. USAID's approach to development requires that the Agency examine cross-sectoral linkages and opportunities to ensure a robust development hypothesis. Biodiversity conservation is a critical approach

for achieving sustainable development and should be considered in strategic approaches to improve development outcomes. The analysis therefore is an opportunity to better understand the strategic linkages between the conservation of a country's biodiversity and development, so that it can structure a sound results framework to support future programming. Notably, the analysis will identify strategic linkages at the results framework level, highlighting opportunities to integrate biodiversity conservation into priority development sectors identified in the CDCS.

The analysis will also evaluate the threat to the country's biodiversity from climate change. In addition to evaluating the climate change threat to biodiversity, the analysis team should consider climate change as a cross-cutting theme and should analyze and incorporate climate change, as appropriate, throughout the report. Climate change vulnerabilities should also be considered when developing the report's recommendations. The analysis team should identify innovative, integrated strategic approaches that link biodiversity conservation to all USAID programming sectors, and to climate change.

1.3 NORTH MACEDONIA PROGRAM 2018-2020

The overall development objective of USAID North Macedonia's 2018-2020 Strategic Framework is that: North Macedonia becomes a prosperous, self-reliant, and inclusive democratic society. USAID North Macedonia has four Intermediate Results (IRs) that contribute to this objective:

- IR1 – Increased Private Sector Growth. USAID is building prosperity by helping to strengthen the competitiveness of Macedonia's micro, small, and medium sized enterprises (MSMEs) through enhanced support services, improved access to finance, a more streamlined business environment, and greater energy security. Assistance is delivered through local actors such as chambers of commerce, business support organizations, and local financial institutions and consultants. This approach is strengthening their capacity to undertake future development efforts.

  The business environment in North Macedonia is being made more responsive to private sector needs by assisting MSMEs to improve awareness and compliance on legal and financial regulations. Partnerships with chambers of commerce are improving the skills and capacity of staff to advise and support legal compliance, lead public-private dialogue, and advocate for business interests.
  Assistance is also improving the effectiveness of inspection bodies and the inspection system, through streamlined legislation, capacity building, professional development of inspectors, and implementation of e-governance software solutions.

- IR 2 – Enhanced Participation by Informed Citizens. USAID assistance is enhancing popular participation by a combination of activities that aim to strengthen civil society and increase the professionalism and sustainability of independent media.

  Participation of citizens, civil society organizations, and the private sector in policy making and implementation is being strengthened through grants to local civil society organizations and their networks. These grants support efforts to raise public awareness and engage government officials on issues of public concern, improve their online

presence, and promote citizen engagement. Assistance also supports a program for young people ages 18-25 to participate as "fellows" to design and implement community-level activities. Civic cluster activities are seeking to encourage and empower citizens from across the political spectrum to participate in activities that produce tangible results in their communities and that foster relationships to advance civic advocacy.

- IR 3 – Good Governance Strengthened. USAID transition initiatives are improving the quality of public governance through capacity building within public entities. Assistance is helping the executive branch, legislature, and national elections machinery. Interventions facilitate direct dialogue between government, civil society, and private sector representatives in the identification and implementation of needed reforms, and support and strengthen the watchdog role of civil society on democratic processes and principles. By helping government and public institutions effectively plan and communicate reform activities, USAID is fostering the partnership between government and its constituencies for implementation of reforms that embody transparency, efficiency, and citizen confidence.

  Political processes are being made more competitive by strengthening the capacity of parliament to draft legislation, perform oversight and representative functions, and engage with the executive branch, civil society, and constituencies. USAID is helping the State Election Commission (SEC) improve electoral processes, for example by installing relevant information technology, developing a legal department, establishing a system for addressing legal complains and disputes, improving voter lists, and conducting education and outreach.[1] Other initiatives are helping the executive branch of government to develop and implement good governance practices, through consensus, cooperation, and coordination within and between key ministries, and between the legislative and executive branches.

- IR 4 – Improved Social Cohesion. USAID is strengthening social cohesion by fostering inter-ethnic integration and increasing the inclusion of socially marginalized groups.

  Inter-ethnic integration is being increased by working with central and local governments, all primary and secondary schools, students, teachers, parents and leaders to create opportunities for school communities to interact and foster better inter-ethnic cohesion among youth. Interventions are building the capacity of preschool and schoolteachers, inspectors from the State Educational Inspectorate, Bureau for Development of Education counselors, and pedagogical students to implement multicultural integrated education and organizing outreach and sport activities for students, parents and community members in ethnically mixed municipalities. Efforts are also building capacity to use media to demonstrate the positive role that youth of different backgrounds can play when working together to tackle challenges in their communities. USAID assistance is helping the Ministry of Education and Science revise the civic education curriculum, engaging students in school and community life and promoting student involvement in decision-making processes in their schools and municipalities. USAID co-finances the renovation of schools based on need and demonstrated progress in ethnic integration and the promotion of civic skills and behaviors of students in school and their communities.

The USAID North Macedonia Strategic Framework 2018-2020 is provided as an attachment.

In March 2019, USAID North Macedonia is launching the CDCS development process for the period 2020-2025. In support, a Biodiversity Assessment will be implemented by July 2019.

II. STATEMENT OF WORK

This analysis will mainly involve syntheses and analyses of existing information, coupled with key stakeholder consultations and site visits to ground-truth information.

Under the direction of the team leader, the analysis team will evaluate the status of biodiversity in North Macedonia. The focus of all activities undertaken will be twofold:

A) Identify actions necessary to conserve biodiversity and the extent to which the Mission meets the actions necessary, and

B) Develop recommendations that will guide the Mission in updating the "extent to which" in the new country strategy.

To accomplish this task, the Assessment Team will perform the activities in Sections 2.1 and 2.2:

2.1 DATA COLLECTION AND ANALYSIS

PRIOR TO IN-COUNTRY FIELDWORK, THE ASSESSMENT TEAM WILL:

1. Gather and begin to analyze existing information to identify biodiversity status, key biodiversity issues, stakeholders, policy and institutional frameworks, and gaps in the available information. Reports and other documentation to be reviewed include previous 119 analyses; the current Strategic Framework 2018-2020 and Project Appraisal Document; information available online (websites of government ministries); project reports and evaluations; the Biodiversity Strategy and Action Plan and the other strategies from the Ministry of Environment and Physical Planning (http://www.moepp.gov.mk/?page_id=3197&lang=en).

2. In coordination with USAID North Macedonia, begin planning site visits based on recommendations from USAID North Macedonia and your own contacts in the country, and on the Team's preliminary review of key topics and information gaps. For a full biodiversity analysis, site visits to examples of some or all of the types of areas listed below are recommended:
   - Sites that illustrate emerging threats;
   - Protected areas (whether managed by the government or private sector) and newly designated PAs (if any);
   - Areas with particular endangered species;
   - Sites with globally significant biodiversity and/or sites where development, or other activities, cooperate or conflict with conservation;

- Non-biodiversity project sites with current or potential cross-sectoral linkages to biodiversity conservation;
- Community conservation areas that have demonstrated biodiversity conservation successes or constraints; and
- Project sites where other donors, national and subnational governments, or other non-USAID entities have worked.

3. 15 days after signing the contract, develop a draft work plan (Deliverable 1). The draft work plan will include a schedule of tasks and milestones, proposed assessment tools, and a discussion of information gaps. In the work plan identify the type of information to be obtained and the key people to engage throughout the analysis process, i.e., USAID/Washington; USAID North Macedonia staff, including the Program Office, technical staff, and the Country Representative; implementing partners; and biodiversity stakeholders, including the host country government, international, national, local nongovernmental organizations, and private sector. The final work plan will be based on USAID North Macedonia comments/suggestions and submitted after the in- briefing of the Assessment Team.

4. Begin preparation of interview guides and a draft report outline based on the outline presented In Annex A: ANNEX A: FAA 119 Analysis Report Outline.

5. Coordinate with the designated Washington technical expert on the proposed list of USAID/Washington technical staff, and other Washington, D.C.-based organizations (such as conservation nongovernmental organizations, multilateral development banks, and others with active programs in the country) to meet and gather relevant information about their programs and input into the status of biodiversity.

AFTER ARRIVAL IN COUNTRY, IN COORDINATION WITH THE ACTIVITY MANAGER, THE ASSESSMENT TEAM WILL:

6. Meet with the USAID North Macedonia Environmental Officer, relevant staff from the General Development and Program Offices to get perspectives on the assignment and an understanding of specific USAID North Macedonia interests, organizations to be contacted and site visits, including advice and protocol on approaching USAID partners and host country organizations with respect to the assignment. USAID North Macedonia will brief the Assessment Team on any sensitivities related to the exercise (i.e., the potential for raising expectations, and the need to be clear about the purpose of the analysis) and relevant guidance. Discussions should include the approach the Assessment Team will take to conduct the analysis and recommendations for potential biodiversity linkages with other sectors.

7. Meet with the Program Office at USAID North Macedonia to gain an understanding of the CDCS process and the potential program goals and objectives.

8. Meet with organizations, government bodies, the private sector, and individuals who are knowledgeable about and/or implementing projects on environment,

biodiversity, and other sectors relevant to biodiversity conservation, such as agriculture, economic growth, health, and governance. The Assessment Team will, to the extent possible meet with the following, as well as other groups identified during field work:

Multilateral institutions

- EU Delegation
- UNDP
- World Bank

BILATERAL DONORS

- GTZ
- SIDA
- SDC

GOVERNMENTAL INSTITUTIONS

- Ministry of Environment and Physical Planning
- Ministry of Economy
- Ministry of Agriculture, Forestry and Water Economy
- Secretariat for European Integration
- Public Enterprise "Macedonian Forests"

ACADEMIC INSTITUTIONS

- Macedonian Academy of Sciences and Arts
- Faculty of Forestry, University of Saints Cyril and Methodius
- Faculty of Natural Sciences, University of Saints Cyril and Methodius
- Faculty of Agriculture, University of Saints Cyril and Methodius

PROTECTED AREAS MANAGEMENT INSTITUTIONS

- National Park Galicica
- National Park Pelister
- National Park Mavrovo

ORGANIZATIONS OF CIVIL SOCIETY

- Ecologists Movement of Macedonia, Skopje
- Milieukontakt Macedonia, Skopje
- Vila Zora, Veles
- Eko-Logic, Skopje
- Center for Environmental Research and Information "Eko-svest", Skopje
- Planetum, Strumica

2.2 PREPARATION OF THE FAA 119 ANALYSIS

1. The Assessment Team will analyze the information gathered and will prepare the

analysis in accordance with the outline attached to the SOW. The Assessment Team should also refer to the FAA 118/119 Best Practices Guide for useful information on producing the analysis, and Annex B of the Guide, the Analysis Report Annotated Outline which provides details on the information required in each section of the report.

2. The Assessment Team shall prepare a draft report, of between 20-35 pages (excluding annexes), for review by USAID (Deliverable 4).

3. The analysis report will respond to the legislative requirements listed above and include recommendations on the extent to which USAID North Macedonia can contribute to the actions necessary to conserve biodiversity.

4. The USAID North Macedonia review period for draft reports will be 10 days. Following receipt of USAID North Macedonia comments on the draft report, the analysis team will prepare and submit a final analysis (Deliverable 5) that incorporates USAID North Macedonia comments, in accordance with the schedule of deliverables below. The analysis report should be sent to the Europe and Eurasia Bureau, Bureau Environmental Unit (BEU) in Washington for review and concurrence. USAID North Macedonia may review and provide comments on Deliverable 5 until the analysis is considered final and sufficient.

5. The FAA 119 analysis draft and final reports will follow the outline, and should include the following maps and tables:
   a) Map of main ecosystems in the country
   b) Map of the forested areas and land uses
   c) Map of PAs, including forest reserves
   d) Map of aquatic resources
   e) Protected area (PA) status table with:
      - A list of all declared and proposed PAs (national parks, wildlife reserves and refuges, forest reserves, sanctuaries, hunting preserves, etc.).
      - Institution(s) responsible for the protection and management of each PA.
      - Area of coverage.
      - Ecosystems contained in each PA.
      - PA management plan status.
   f) Table of the status of natural resources outside protected areas with:
      - Land cover and land-use type (e.g., wetlands/freshwater sources, major catchment areas, agricultural ecosystems, etc.).
      - Institution(s) responsible for management.
      - An overview of the major threats and challenges to conserving biodiversity outside PAs.
      - Economic potential.
   g) Table of conservation initiatives including:
      - A list of the main conservation initiatives implemented by government, donors, nongovernmental organizations, private sector, and universities.
      - Brief evaluation of effectiveness.
      - Implementation dates and funding levels

III. SCHEDULE AND LOGISTICS

The assignment is expected to last no longer than 3 months from date of contract signing to submission of the final deliverable. This includes approximately 2-3 weeks of work in-country; 3-4 weeks to produce the draft report following in-country work; 10 days for USAID review of the draft report; and 10 days to produce the final report.

The level of effort (LOE) requirements for this task is:

- A total of 12 days for expatriate staff in-country.
- A total of 25 days for expatriate staff working from their home base.
- A total of 20 days each for local staff.

Table 1: Preliminary weekly activities and milestones (actual schedule will be per approved workplan)

Week	Activity/Milestone	Comments
Week (1 April – 19 April)	Develop Work Plan	Within 15 days after approval of this Activity Specification; will include a project data collection and drafting plan.
Week 1-6(1 April to 8 May) ▪	Data collection and analysis prior to in-country fieldwork	To gather and review documents and other preparatory tasks, such as organizing in-country meetings, site visit logistics and developing the work plan and interview guide. This will ensure that when the team meets in country, all members are prepared.
Week 7-8 (May10 – May 23)	In-country fieldwork	USAID exit briefing marking the end of the in-country period.
Week 9-12 (June 28)	Produce the draft report	The analysis team can write a substantial portion of the report while in-country, yet, the majority of the report writing is completed following the in-country period.
Week 13-14(1 July to 12 July)	Mission and E&E BEO Review	USAID North Macedonia will coordinate with the E&E BEU to provide a combined set of comments on the draft report.
Week 15-16 (15 July to 26 July)	Produce the final report	The team leader is responsible for finalizing the report. The final report must be well-organized, concisely and clearly written, and edited.

IV. DELIVERABLES

The following are the deliverables for this task:

Deliverable 1. Work plan and schedule submitted within 15 working days of start date. The work plan should include all tasks and a timetable, milestones, and deliverables and explain the following information:

- Plan for coordination and consultations with USAID North Macedonia.
- The Assessment Team's expectations of USAID North Macedonia (activity manager and others).
- A brief agenda for GDO and Program Office in- and exit-briefings.
- Proposed coordination with implementing partners and donors.
- Coordination with USAID North Macedonia to ensure the Assessment Team can respond to "extent to which."
- Plan for communicating the recommendations to USAID North Macedonia.

Deliverable 2. Weekly check-ins with the activity manager, including weekly reports. The E&E BEO will be sent weekly reports.

Deliverable 3. Exit briefing presentation prior to the Assessment Team's departure from the country.

Deliverable 4. Draft FAA 119 submitted within 20 working days after the conclusion of in-country work.

Deliverable 5. Following 10 days for USAID review and comment, a revised final report, incorporating all comments, formatted and branded in accordance with USAID requirements, will be submitted within 10 working days of the receipt of comments on the draft.

V. ROLE OF THE USAID MISSION

USAID North Macedonia will provide the Assessment Team with:

- A list of key documents to review.

A list of key stakeholders to be contacted and will assist the team in cases when initial contact is difficult.

- Criteria to identify potential site visits.
- A list of relevant donor projects (if any).
- Review and feedback on the draft analysis report.

VI. QUALIFICATIONS OF THE CONSULTANTS

The team leader will lead the analysis and should be a Senior Level Natural Resource Management Specialist with the following qualifications:

- Post-graduate qualifications (master's level degree or higher) in biology, ecology, zoology, forestry, ecosystem conservation, or a closely related field.
- Knowledge of USAID's strategic planning process related to biodiversity.
- Expertise in assessing environmental threats.
- Experience in the geographical region and the specific country, if possible.
- Experience coordinating analyses and leading teams.

- Exceptional organizational, analytical, writing, and presentation skills.
- Fluent in English.

Biodiversity Specialist with the following qualifications:

- Expertise in the country's biodiversity (including forests) and natural resources management status
- Good contacts within the country's government agencies, nongovernmental organizations, international donors, and private sector.
- Fluent in English.

Institutional Specialist with the following qualifications:

- Expertise in the country's environmental policy and institutional framework.
- Good contacts within the country's government agencies, nongovernmental organizations, international donors, and private sector.
- Fluent in English

ANNEX A: FAA 119 ANALYSIS REPORT OUTLINE

Cover Page Acknowledgements Front Material Executive Summary

I. Introduction
- **1.1 Purpose**
- **1.2 Brief Description of the USAID Program**
- **1.3 Methodology**

II. Country Context
- **2.1 Location and Country Context**
- **2.2 Biophysical Setting**

III. Status of the Country's Biodiversity
- **3.1 Major Ecosystem Types and Status**
- **3.2 Status of Forests**
- **3.3 Species Diversity and Status**
- **3.4 Genetic Diversity**
- **3.5 Status and Management of Protected Areas**
- **3.6 Status and Management of Key Natural Resources Outside Protected Areas**

IV. Value and Economic Potential
- **4.1 Value of Biodiversity**
- **4.2 Ecosystem Goods and Services**

V. Legal Framework Affecting Conservation
- **5.1 National Laws, Policies and Strategies**
- **5.2 International Agreements**
- **5.3 Government Agencies**
- **5.4 Conservation Initiatives: Gap Analysis**

VI. Threats to Biodiversity)
- **6.1 Direct Threats to Biodiversity**
- **6.2 Drivers of Threats**

VII. Actions Necessary to Conserve Biodiversity

VIII. Extent to Which the Mission Meets the Identified Actions Needed

IX. Recommendations
- **9.1 Recommendations Based on Actions Necessary to Conserve Biodiversity**
- **9.2 Other Opportunities**

X. Annexes

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[2] Source: USAID, *Foreign Assistance Act Sections 118/119 Tropical Forest and Biodiversity Analysis – Best Practices Guide*, February 2017.

ANNEX B. ANALYSIS TEAM BIOS

Dr. Patricia Foster-Turley (Team Leader) is a biodiversity specialist who has led teams conducting FAA 118/119 analyses in more than a dozen countries throughout Asia, Africa and Eastern Europe, including six analyses in the Eastern European region (Serbia—twice; Montenegro, Azerbaijan, Albania, Kyrgyz Republic, Moldova). She has a PhD in zoology and has worked in various capacities as a consultant for USAID, Southwick Associates and other entities since 1999. As a conservationist, she pulled together an international team and edited the IUCN Species Survival Plan for Otters (published in 1990 and still in use today) and remains a member of the IUCN Species Survival Commission. For the past 15 years she has also worked on local conservation initiatives in North Florida and writes a weekly newspaper column on wildlife, biodiversity and conservation which serves to educate readers.

Robertina Brajanoska is a biodiversity policy specialist with an MA in agricultural science who has been working over 18 years in nature conservation in North Macedonia in both the governmental and non-governmental sectors in the country. Through the work in the Biodiversity Department in the Ministry of Environment and Physical Planning, she was involved in development of national legislation, approximation to EU legislation, permitting procedures, implementation of international agreements, development of national strategic documents and different activities related to PAs. As an executive director of Macedonian ecological society, she is involved in implementation of different biodiversity conservation projects and preparation of valorization studies for designation of PAs. She was a coordinator of the project for development of the 2018 NBASP 2018 to 2023 and a member of the regional team for assessment of biodiversity data management and reporting in SEE Europe as a GIZ consultant for North Macedonia.

Natalija Melovska is a flora and ecosystem analysis specialist with background in biology and environmental sciences. She worked in the Macedonian Ecological Society for ten years in the field of plant monitoring and conservation and ecosystem research. Through the work within the society, she took part as junior expert in several important national projects including the 2018 National Biodiversity Strategy and Action Plan, the 2017 Nature Protection Programme and short engagements in developing management plans for national PAs. Her involvement in continuous projects related to vascular plant conservation from 2007 up to now has given her a strong background in botany and plant conservation actions as well as good cooperative connections with many smaller local environmental organizations in the country.

Aleksandar Stojanov is a wildlife biologist with 13 years' experience in mammal conservation and protection in Macedonia. Since 2006, he has been a project manager for the Balkan Lynx Recovery Programme at the Macedonian Ecological Society and has also worked on many other national and regional conservation and research related projects and studies concerning a variety of mammals including bears, ungulates, otters, bats and small mammals. He has been trained internationally on monitoring methods for large carnivores in conjunction with the IUCN Cat Specialist Group, the Norwegian Institute for Nature Conservation, the Veterinary Faculty in Croatia and the NGO ARCTUROS. He also has experience in identification and establishment of PAs and Natura 2000 sites, human dimension studies and ecological education. He has participated in the identification of the Representative network of PAs on the national level, and in preparation of Brown bear and Caves Conservation Action Plans for Prespa Region, and development of Balkan Lynx Conservation Strategy and Action Plan for the Republic of Macedonia.

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ANNEX D. LIST OF TAXONOMIC GROUPS WITH NUMBER OF SPECIES AND CONSERVATION STATUS IN NORTH MACEDONIA

Taxon	Number of species[1,3,4,5,6,7]	Natura 2000 Birds/Habitat Directive[1,8,9]	Bern Convention [1,10]	IUCN globally threatened categories[1,2]	National legislation[1,11]
Mammals	87	33	55	7	16
Birds	334	65	323	4	107
Reptiles	32	25	32	1	23
Amphibians	14	8	14	0	8
Fishes	87	26	-	15	30
Invertebrates	13379	19	-	67	548
Plants	3500	6	12	82	202
Fungi	2000	-	-	122	72
Lichens	450	-	-	-	12
Algae	2095	-	-	-	-

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ANNEX E. MAJOR PROTECTED AREAS IN NORTH MACEDONIA

Site	Old category (according to Spatial Plan and old legislation)	Corresponding IUCN category (in accordance to the legislation in place)	Year Designation	Area (ha)	Management Body	Management Plan	Importance	Important Species/ Ecosystems	Comments and Recommendation
Arboretum	Monument of nature	Monument of nature	1965	3.3		No	Dendrological importance	about 600 species of trees	
Vevchani Springs	Monument of nature	Monument of nature	2012	1370	Municipality of Vevcani	Draft	Hydrological importance		
Cave Mlechnik	Monument of nature	Monument of nature	1963	0		No	Zoological and Geomorphological importance		
Cave Ubavica	Monument of nature	Monument of nature	1968	0		No	Zoological, Geomorphological and Hydrological importance		
Cham Chiflik	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1969	428		No	Botanical and Zoological importance	Ass. *Coccifero-Carpinetum orientalis pinetosum pallasianae*	
Garska Reka	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1960	4	Public institution National Park Mavrovo	Part of NP Mavrovo	Botanical importance	tree species *Aesculus hippocastanum*	The site is part of the NP Mavrovo and the protection measures will be part of the Management Plan
Gol Chovek	Monument of nature	Monument of nature	1987	5		No	Botanical importance	tree species *Arbutus andrachne*	

Site	Old category (according to Spatial Plan and old legislation)	Corresponding IUCN category (in accordance to the legislation in place)	Year Designation	Area (ha)	Management Body	Management Plan	Importance	Important Species/ Ecosystems	Comments and Recommendation
Golem Kozjak	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1964	4		No	Botanical importance	tree species *Pinus silvestris*	Significant forest ecosystem in terms of quality of the forest
Slatinski Izvor	Monument of nature	Monument of nature	2011	414	Municipality of Makedonski Brod	No	Geomorphological and Hydrological importance		The municipality transferred the management to the Speleological Society 'Ursus Speleos'
River Gradeshnichka Reka	Monument of nature	Monument of nature	1996	450		No	Ornithological, Geomorphological and Hydrological importance		
Demir Kapija	Monument of nature	Monument of nature	1960	200		No	Biodiversity conservation; Geomorphological importance; Landscape protection		
Ezerani	Strict Nature Reserve	Nature park	2012	1917	Municipality of Resen	Yes	Biodiversity conservation		
Galichica	National park	National park	2010	24151	Public institution National Park Galicica	Yes	Biodiversity conservation; Geomorphological importance		

Site	Old category (according to Spatial Plan and old legislation)	Corresponding IUCN category (in accordance to the legislation in place)	Year Designation	Area (ha)	Management Body	Management Plan	Importance	Important Species/ Ecosystems	Comments and Recommendation
Drenochka Reka	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1960	2		No	Botanical importance	tree species *Aesculus hippocastanum*	
Duvalo	Monument of nature	Monument of nature	1979	0		No	Geomorphological, Mineralogical and petrological importance		
Gorge Drenovska Klisura	Monument of nature	Monument of nature	1991	0.26		No	Biodiversity conservation; Geomorphological importance	relict species *Molinia coerulea, Erianthus hostil, Adiantum copillus veneris, Pyracantha coccinea, Carex cuspidata*	
Zvegor	Monument of nature	Monument of nature	1986	75		No	Geomorphological, paleontological importance		
Jasen	Multipurpose area	Multipurpose area	2005	26923.05	Public enterprise multipurpose area Jasen	Draft	Biodiversity conservation; Geomorphological importance; Landscape protection; Water source protection; Hydrological importance		

Site	Old category (according to Spatial Plan and old legislation)	Corresponding IUCN category (in accordance to the legislation in place)	Year Designation	Area (ha)	Management Body	Management Plan	Importance	Important Species/ Ecosystems	Comments and Recommendation
Katlanovski Predel	Monument of nature	Monument of nature	1991	5442		No	Geomorphological importance		
Juruchica	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1969	1785		No	Biodiversity conservation	tree species *Pinus mugo*	
Kale— Skopje fortress	Monument of nature	Monument of nature	1987	0.67		No	Paleontological importance		
Koleshino Waterfall	Monument of nature	Monument of nature	1985	0		No	Botanical, Geomorphological and Hydrological importance		
Karaslari	Monument of nature	Monument of nature	1983	148		No	Paleontological importance		
Karshi Bavchi	Monument of nature	Monument of nature	1967	10		No	Dendrological and Geomorphological importance		
Kozhle	Landscape with Specific Natural Features	Protected landscape	1987	85		No	Biodiversity conservation; Geomorphological importance	tree species *Juniperus foetidissima; Juniperus excelsa*	

Site	Old category (according to Spatial Plan and old legislation)	Corresponding IUCN category (in accordance to the legislation in place)	Year Designation	Area (ha)	Management Body	Management Plan	Importance	Important Species/ Ecosystems	Comments and Recommendation
Konopishte	Monument of nature	Monument of nature	1986	70		No	Ornithological importance; Geomorphological importance		
Kuklica	Monument of nature	Monument of nature	2008	55.7	Municipality of Kratovo	No	Geomorphological importance		The municipality transferred the management to the NGO Izvor-Kratovo
Lake Dojran	Monument of nature	Monument of nature	2011	2730	Municipality of Dojran	Draft	Biodiversity conservation; Hydrological importance		Ramsar sites
Lake Ohrid	Monument of nature	Monument of nature	1958	23000		No	Biodiversity conservation; Geomorphological importance; Landscape protection; Water source protection; Hydrological importance		
Lake Prespa	Monument of nature	Monument of nature	2011	17788.61	Municipality of Resen	Draft	Biodiversity conservation		Ramsar sites
Lokvi	Monument of nature	Monument of nature	2010	15	Municipality of Prilep	No	Zoological importance		

Site	Old category (according to Spatial Plan and old legislation)	Corresponding IUCN category (in accordance to the legislation in place)	Year Designation	Area (ha)	Management Body	Management Plan	Importance	Important Species/ Ecosystems	Comments and Recommendation
Markovi Kuli	Monument of nature	Monument of nature	2006	3649	Institute For Old Slavic Culture-Prilep	Draft	Biodiversity conservation; Geomorphological importance; Mineralogical and petrological importance		
Matka Canyon	Monument of nature	Monument of nature	1994	5443	City of Skopje	Draft	Biodiversity conservation; Geomorphological importance		In procedure
Menkova Livada	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1964	3.5		No	Botanical importance	tree species *Pinus nigra*	
Murite	Monument of nature	Monument of nature	1987	10		No	Botanical importance	tree species *Abies alba, Fagus moesiaca, Pinus silvestris, Picea excelsa*	

Site	Old category (according to Spatial Plan and old legislation)	Corresponding IUCN category (in accordance to the legislation in place)	Year Designation	Area (ha)	Management Body	Management Plan	Importance	Important Species/ Ecosystems	Comments and Recommendation
Mavrovo	National park	National park	1949	73088	Public institution National Park Mavrovo	Draft	Biodiversity conservation; Geomorphological importance; Landscape protection; Water source protection; Hydrological importance		
Pelister	National park	National park	2007	17150	Public institution National Park Pelister	Yes	Biodiversity conservation; Geomorphological importance; Landscape protection; Water source protection; Hydrological importance		
Ploche Litotelmi	Strict Nature Reserve	Strict Nature Reserve	2010	23.2	Municipality of Kratovo	No	Zoological importance		
Smolari Waterfall	Monument of nature	Monument of nature	2006	696	Municipality of Novo Selo	No	Biodiversity conservation; Geomorphological importance; Hydrological importance		

Site	Old category (according to Spatial Plan and old legislation)	Corresponding IUCN category (in accordance to the legislation in place)	Year Designation	Area (ha)	Management Body	Management Plan	Importance	Important Species/ Ecosystems	Comments and Recommendation
Suvi Dol	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1961	287		No	Botanical importance	tree species *Aesculus hippocastanum*	
Popova Shapka	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1966	5.2		No	Botanical importance	tree species *Picea excelsa*	
Tikvesh	Strict Nature Reserve	Strict Nature Reserve	1997	10000		Draft	Biodiversity conservation; Geomorphological importance; Landscape protection		
Vodno	Landscape with Specific Natural Features	Protected landscape	1970	1953		No	Botanical importance		
Wetland Katlanovsko Blato	Individual Plant and Animal Species Outside of Nature Reserves	Nature park	1968	70		No	Biodiversity conservation		

ANNEX F. MAJOR DONOR PROJECTS IN NORTH MACEDONIA

Project Name	Implementer / Funder	Duration	Funding	Purpose
Revitalization of Prespa Lake ecosystems	SDC/UNDP	2010-2015	6.38 mil USD	Activities towards improvement of Prespa Lake state, strengthening of its adaptation capacity and provision of long-term plan for control of eutrophication processes were implemented. Management plan for protected area Prespa Lake as monument of nature was developed and strengthening of management capacities of Resen municipality.
Balkan Lynx Recovery Programme (BLRP)	MAVA Foundation/MES	Started in 2006 – on-going	202.000 EUR (just for the current phase, 2016-2019)	Monitoring and direct conservation activities for the Balkan lynx, other large carnivores and large ungulates and (ii) support for establishment of new PAs in the western part of the country (Jablanica, Shar Planina and Ilinska-Plakenska mountain range) in the Balkan lynx distribution area.
Development of integrated system for prevention and early warning of forest fires	JICA/Government of North Macedonia	2014		Goal of the project was to decrease the occurrence of the major forest fires through strengthening capacities of the Crisis Management center for notification-transmission of information and data to the relevant competent institutions and improvement of cooperation. Macedonian forest fire information system (MKFFIS) was developed.
Strengthening the central and local administrative capacity for the implementation of Natura 2000 in Macedonia	EU funds (IPA TAIB 2011)	2016	1.2 mil EUR	Inventory for development of EU ecological network Natura 2000 in Macedonia was initiated in order to identify and select suitable places for designation as Special protection areas according to the Birds Directive and Special areas of conservation, according to the Habitats Directive.
Creation of standards for sustainable forest management according to PEFC	CNVP	2016		Developing awareness and capacity on sustainable forest management and PEFC certification within the forestry community of Macedonia, Albania and Kosovo, with the goal to lay the groundwork for the development of national forest certification systems.

Project Name	Implementer / Funder	Duration	Funding	Purpose
Nature Conservation Programme in Macedonia phase I	Swiss Development and Cooperation (SDC), Helvetas Int., Farmahem, MEPP, implementation through different partners/organizations	2012-2016	5 mil CHF	One of the components of the project has special focus on ecological gap analyses and preparation of sensitivity map in Bregalnica watershed as well as proposals for establishment of new PAs. Other components include development of Spatial Plan for the East Planning region; development of National Strategy for Nature; strengthening of forestry faculty and sustainable forest management; support of local producers of rice and honey, etc.
Nature Conservation Programme in Macedonia phase II	SDC, Farmahem, MEPP, CDEPR, MES, Forestry Faculty	2017-2020	4 mil CHF	Aim is to assist the country in the conservation of its outstanding biodiversity and natural ecosystems through promotion of their sustainable use and management. Using holistic approach and through involvement of relevant stakeholders it supports intervention on a national (identification of ecosystem services and testing payments, support of Forestry faculty, etc.), regional (support proclamation of PAs, identification of Natura 2000 sites, development of regional plan for forest management, etc. in the East Planning Region) and local level (different projects with municipalities and local stakeholders for conservation and sustainable use of natural resources, promotion, support of rice and honey producers, etc.).
Strengthening the capacities for effective implementation of the Acquis for nature protection	EU funds Twinning project MK 13 IPA/Finish Environmental Institute/MEPP	2017-2019	1.1 mil EUR	Harmonization of nature legislation with EU Habitats and Birds directives; strengthened capacities for studies for valorization of natural values for PAs of national and EU importance; development of monitoring protocols for 15 flora and fauna species; preparation of 2 management plans for Prespa Lake and NP Pelister as Natura 2000 sites.
Improving the management of PAs	EU funds; implementation Agency UNDP; MEPP; implemented by PAs management bodies and NGOs	2018-2019	3.6 mil EUR	The project aims to improve nature protection and to promote sustainable use of natural resources while increasing the capacity of management authorities of PAs, local self-governments and NGOs to manage and promote PAs in a professional and sustainable fashion. Implemented through large grants to strengthen management capacities of national parks and other bigger PAs, and small grants to NGOs, faculties, management authorities for conservation action in different PAs

Project Name	Implementer / Funder	Duration	Funding	Purpose
Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Mainstreaming Biodiversity into Land Use Planning	GEF STAR5 /UNEP	2017-2020	3.6 mil US$	The overall objective of the project is to promote biodiversity conservation through supporting national capacities in expanding the national PAs coverage, improvement of management effectiveness through creation of a good policy and capacity environment, improve land use planning and management and pilot testing as well as strong inclusion of local stakeholders throughout the process.
Conservation and sustainable use of biodiversity at Lakes Prespa, Ohrid and Shkodra/Skadar (CSBL)	GIZ/BMZ/ responsible ministries from Albania, North Macedonia and Montenegro	2012-2017	??	The main objective was the lakes' natural resources are managed on a transboundary basis and in compliance with EU environmental and biodiversity protection targets. Aimed to strengthen inter-ministerial cooperation for the environment, water management and fisheries. Included biodiversity conservation activities for development of monitoring protocols and training for selected species and habitats.
Conservation and sustainable use of biodiversity at Lakes Prespa, Ohrid and Shkodra/Skadar (CSBL) – phase II	GIZ/BMZ/ responsible ministries from Albania, North Macedonia and Montenegro	2019-2021	2 mil EUR for the 3 countries	Aim is to continue the activities of the previous phase.
Open regional funds for South-East Europe for Biodiversity, phase I	GIZ – Albania, BiH, Kosovo, North Macedonia, Montenegro, Serbia	2015-2018	??	Objective was to increase regional cooperation in South-East Europe is contributing to the implementation of the EU Biodiversity Strategy 2020. Several components related to regional cooperation; biodiversity information management and reporting, support of a network of conservation NGOs in the Balkan (BioNET); ecosystem services, etc.
Open regional funds for South-East Europe for Biodiversity, phase II	GIZ – Albania, BiH, Kosovo, North Macedonia, Montenegro, Serbia	2018-2020	??	Continuation of joint activities for biodiversity conservation through several components related to regional cooperation; biodiversity information management and reporting, maintenance of BioNET; trans-boundary ecosystem management, ecosystem services, etc.

Project Name	Implementer / Funder	Duration	Funding	Purpose
Working towards transboundary conservation of Prespa region by common actions raised by PrespaNet partners	MES/PONT	2018-2021	210,747 EUR. In addition to this amount at least 25% of co-financing comes from non-PONT sources	The grant supports wetlands restoration, monitoring of target species of water birds and the establishment of a network of community volunteers to assist in the protection and monitoring of wild plant species. Data on the distribution and the population size of specific large mammals and the damage caused to livestock are analysed to develop guidelines for preventive measures in the identified conflict hotspot. This is done in close cooperation with the PrespaNet partners in Albania and Greece.
Establishment of a new Management Plan of Pelister NP	NP Pelister/PONT	2018-2020	309,420 EUR. In addition to this amount at least 50% of co-financing comes from non-PONT sources.	With this planning grant a new Management Plan for Pelister National Park is developed. Pelister National Park was re-proclaimed as a National Park in 2007 and its territory was enlarged by about 6.000 hectares, mostly the catchment of Braychinska river (Prespa side). For the additional included territory an inventory of all species and habitats, birds, endemic and rare species is needed.
Operational Plan 2019 & Updating of Management Plan (OP2019)	NP Galicica/PONT	2019		For 2019 a new operational planning format and process was adopted. Based on historical data, the 2019 operational plan estimates the costs for implementation of the 4 programmes of the current management plan to reflect the shift from operations related to firewood production to standard operations of a protected area: conservation and visitor management. PIGNP will provide the vast majority of the financial and human resources to be invested in the management planning process that is going to have a strong emphasis on policy development and stakeholder participation.
Conservation and sustainable management of Prespa Nature Treasures	Resen municipality/PONT	2018-2019		The grant supports the implementation of priority activities derived from the management plan divided into four outputs. This is done in close cooperation between the Municipality of Resen, PONT and the EU Twinning project for the monitoring of target habitats and species, according to national legislation and EU birds and habitats directive (NATURA 2000).
Development of a Strategic Plan for the hydro biological Institute Ohrid	Hydro biological Institute, Ohrid/PONT	2018-2019		Through this planning grant, a five-year Strategic Plan is developed for the involvement of the HIO in the achievement of PONT's mission through providing scientific evidence and technical advice concerning the priority conservation actions identified in the PONT Strategic Framework and the management plans for the PAs in the Wider Prespa Area.

Project Name	Implementer / Funder	Duration	Funding	Purpose
Working together for conservation of national endemic plants	CEPF/MES	2019-2022	82,000 USD	Monitoring and direct conservation actions for selected national endemic plants distributed within five Important Plant Areas in North Macedonia. Working together with local NGO partners from the selected sites in order to promote the Important Plant Areas and key plant species.
Technical assistance for using wood energy to improve sustainable economic rural development and meet the 2020 renewable energy targets for Western Balkan	FAO/Albania/BiH/North Macedonia	2015-2017	475,000 USD	Comprises several components on current fuelwood consumption; fuelwood supply sources; created GIS database with a module for wood supply, demand and integration; and report on current wood energy situation in the Balkan countries.
Assessment of the methodology for implementation of the forest inventory	FAO/MAFWE	2018-2019	65,000 USD	Objective was to assist the Government to achieve sustainable development of forestry sector through developing a forest inventory methodology that would encompass not just the forestry sector but also environment and nature protection. Financial resources are required to implement the methodology.

ANNEX G. LAWS THAT IMPACT BIODIVERSITY IN NORTH MACEDONIA

Topic	Law
Agrobiodiversity	**Law on Agriculture and Rural Development** (Official Gazette of the Republic of Macedonia no. 49/2010; 53/2011, 126/2012, 15/2013 and 69/2013)
	Law on Seed and Seedling Material (Official Gazette of the Republic of Macedonia no. 55/11)
	Law on Agricultural Products Quality (Official Gazette of the Republic of Macedonia no. 140/2010, 53/2011 and 55/2012)
	Law on Animal Husbandry (Official Gazette of the Republic of Macedonia no. 7/2008, 116/2010 and 23/2013)
Use of natural resources	**Law on Hunting** (Official Gazette of the Republic of Macedonia no. 26/09, 32/09, 136/11, 01/12, 69/13, 164/13 and 187/13)
	Law on Forests (Official Gazette of the Republic of Macedonia no. 64/09, 24/11, 53/11, 25/13, 79/13, 147/13 and 43/13)
	Law on Fishery and Aquaculture (Official Gazette of the Republic of Macedonia no. (7/08, 67/10, 47/11, 53/11 and 95/12)
	Law on Organic Agricultural Production (Official Gazette of the Republic of Macedonia no. 146/2009)
	Law on Waters (Official Gazette of the Republic of Macedonia no. 87/08, 06/09, 161/09, 83/10 and 51/11)
	Law on Water Management Companies (Official Gazette of the Republic of Macedonia no. 85/03, 95/05, 103/08, 1/12 and 95/12)
	Law on Water Communities (Official Gazette of the Republic of Macedonia no. 51/03, 95/05, 113/07 and 36/11)
	Law on Pastures Management (Official Gazette of the Republic of Macedonia no. 3/98, 101/2000, 89/2008, 105/2009, 42/10 and 164/2013)
Land use	**Law on Spatial and Urban Planning** (Official Gazette of the Republic of Macedonia no. 51/2005, 137/07,91/09, 124/10,18/11,53/11,144/12 and 55/13)
	Law on Construction (Official Gazette of the Republic of Macedonia no. 130/09, 124/10, 18/11, 36/11, 13/12, 144/12, 25/13)

Topic	Law
	Law on Construction Land (Official Gazette of the Republic of Macedonia no. 17/11, 53/11, 144/12, 25/13
	Law on Agricultural Land (Official Gazette of the Republic of Macedonia no. 135/07, 18/11, 42/11, 148/11,95/2012, 79/2013, 87/2013, 106/2013, 164/2013 and 39/2014)
	Law on Concessions and Other Public Private Partnership (Official Gazette of the Republic of Macedonia no. 7/2008, 139/2008, 64/2009 and 52/2010)
	Law on Mineral Resources (Official Gazette of the Republic of Macedonia no. 136/2012, 25/2013, 93/2013, 132/2013 and 44/2014)
	Law on Auto Bearings (Official Gazette of the Republic of Macedonia no. 13/2013)
	Law on Tourism Development Zones (Official Gazette of the Republic of Macedonia no.141/12)

ANNEX H. MAJOR BIODIVERSITY CONVENTIONS TO WHICH NORTH MACEDONIA IS A PARTY

Multilateral Agreements	Ratification and Implementation
Convention on Biological Diversity (CBD)	• Ratified with the Law on Ratification (Official Gazette of Macedonia no. 54/97); entered into force in 1998 • First NBSAP adopted in 2004; Revised NBSAP adopted in 2018, national target aligned with Aichi targets • Fifth national reports and several thematic reports prepared and submitted to the CBD Secretariat; Sixth national report in initial phase of preparation • According to the Fifth national report, implementation of the Biodiversity action plan showed modest progress (about 55% of the actions have been implemented or partially implemented)
Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)	• Ratified with Decree on ratification (Official Gazette of SFRJ no. 9/77); Macedonia became Party to the Convention with nomination of Lake Prespa on World Ramsar List in 1995 • Last National Report was submitted in 2015 (the 12th Conference of Parties) • Two areas from Macedonia (Prespa and Dojran Lakes) are included on the Ramsar list, both protected at national level, whereas, in the past few years, a number of activities were implemented for protection the Lake Prespa
Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)	• Ratified with the Law on Ratification (Official Gazette of the Macedonia no. 38/99); entered into force in 1999 • National Report for implementation of the Convention was submitted in 2017 • Working group from relevant institutions is established and protocols on procedures and cooperation of organizations and institutions concerning the poisoning are drafted
Agreement on the Conservation of Bats in Europe (EUROBATS)	• Ratified with the Law on Ratification (Official Gazette of the Macedonia no. 38/99); entered into force on 10.09.1999 • National Report for implementation of the Agreement for the period 2015-2018 was submitted in 2018
Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)	• Ratified with the Law on Ratification (Official Gazette of the Macedonia no. 32/99); entered into force on 01.11.1999 • National Report for implementation of the Agreement for the period 2015-2017 was submitted in 2018

Multilateral Agreements	Ratification and Implementation
Convention for the Protection of the World Cultural and Natural Heritage (UNESCO)	• Ratified with act on succession from SFRJ in 1977 (Official Gazette of SFRJ no. 56/74); Macedonia became Party to the Convention on 08.09.1991 • Ohrid region is included on the UNESCO list of world natural and cultural heritage • Two areas (Markovi Kuli and Slatinski Izvor) are included on the tentative list • The transboundary biosphere reserve Ohrid-Prespa was declared in 2014
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	• Ratified with the Law on Ratification (Official Gazette of the Macedonia no. 82/99); Macedonia became Party to the Convention on 02.10.2000 • Annual reports are regularly submitted to the Secretariat of the Convention with detailed data on issued CITES certificates for import, export and re-export of species included in Appendices of the Convention • North Macedonia lacks capacities/facilities for its full implementation
Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)	• Ratified with the Law on Ratification (Official Gazette of the Macedonia no. 49/97); entered into force in 1999 • National Emerald network was developed including 35 areas of special conservation interest. They are used as a background information in the process of identification of Natura 2000 sites and implementation of EU Bird and habitat directives • Biennial report on implementation of the Convention for the period 2013-2014 was submitted in 2015
United Nations Framework Convention on Climate Change (UNFCCC)	• Ratified with the Law on Ratification (Official Gazette of the Macedonia no. 6/97); entered into force on 28.04.1998 • Third National Communication on climate change was adopted in 2014 including separate chapter with measures related to biodiversity.
Convention on Access to Information, Public Participation in Decision-making and Access to Justice on Issues related to Environment	• Ratified with the Law on Ratification (Official Gazette of the Macedonia no. 40/99) • Strategy for implementation of the Aarhus Convention in Macedonia was adopted in 2005

ANNEX I. MAPS

The following pages include the maps listed here:

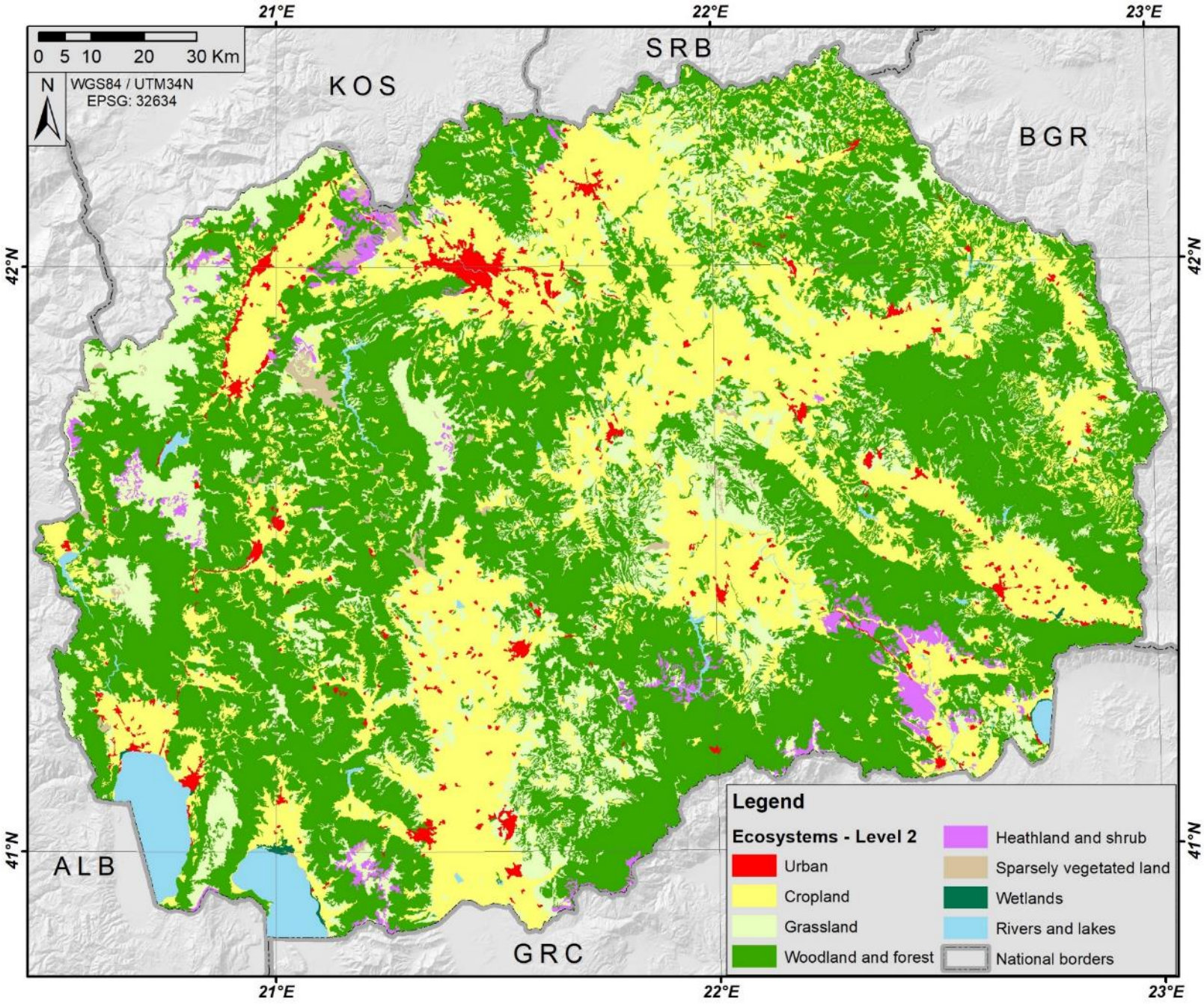
1. Map of main ecosystems in the country
2. Map of the forested areas and land uses
3. Map of PAs, including forest reserves
4. Map of aquatic resources

The codes for the legend in Map #2 are found in this table.

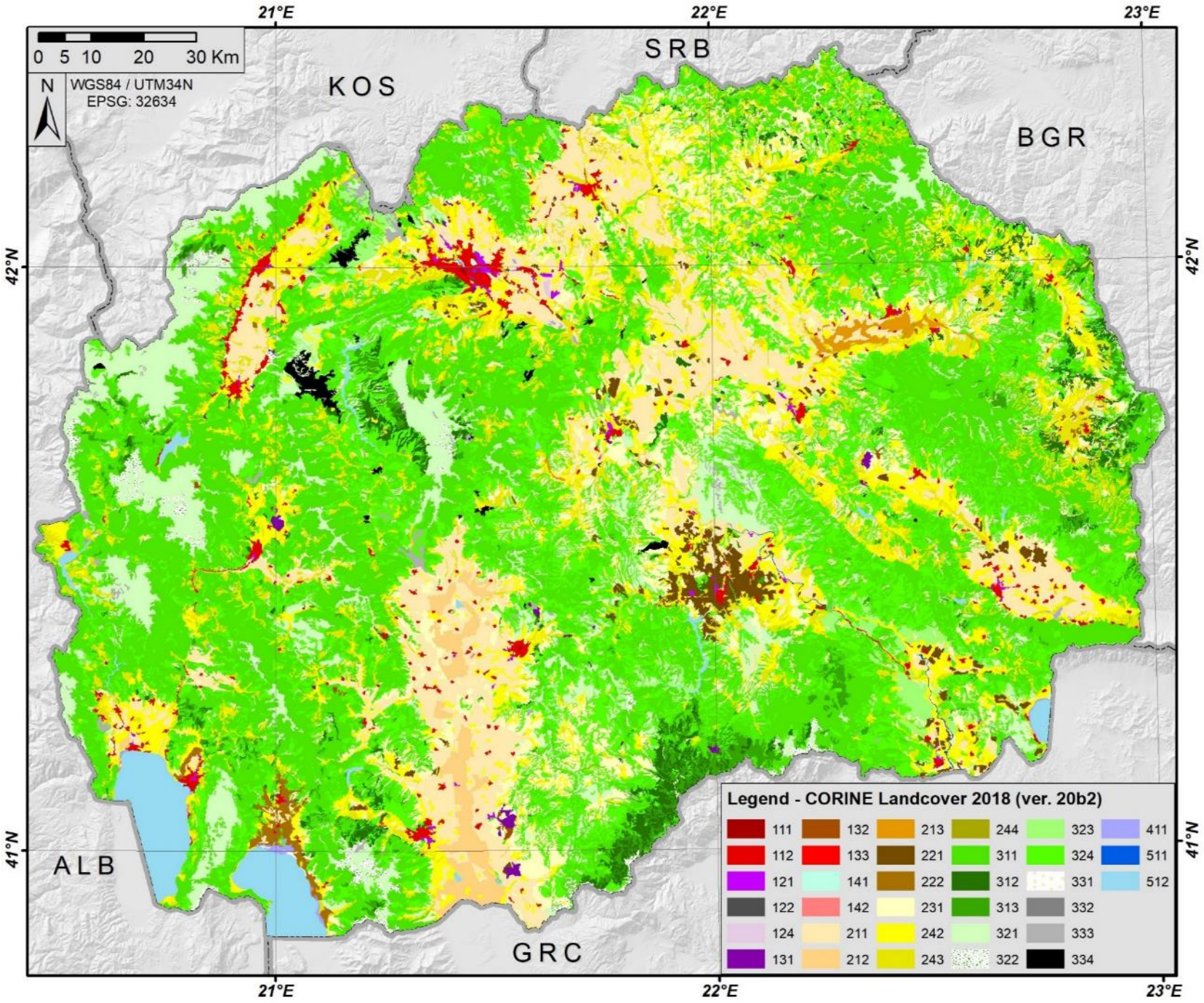
Land use Code	Land use description
111	Continuous urban fabric
112	Discontinuous urban fabric
121	Industrial or commercial units
122	Road and rail networks and associated land
124	Airports
131	Mineral extraction sites
132	Dump sites
133	Construction sites
141	Green urban areas
142	Sport and leisure facilities
211	Non-irrigated arable land
212	Permanently irrigated land
213	Rice fields
221	Vineyards
222	Fruit trees and berry plantations
231	Pastures
242	Complex cultivation patterns
243	Land principally occupied by agriculture, with significant areas of natural vegetation
244	Agro-forestry areas

Land use Code	Land use description
311	Broad-leaved forest
312	Coniferous forest
313	Mixed forest
321	Natural grasslands
322	Moors and heathland
323	Sclerophyllous vegetation
324	Transitional woodland-shrub
331	Beaches, dunes, sands
332	Bare rocks
333	Sparsely vegetated areas
334	Burnt areas
411	Inland marshes
511	Water courses
512	Water bodies

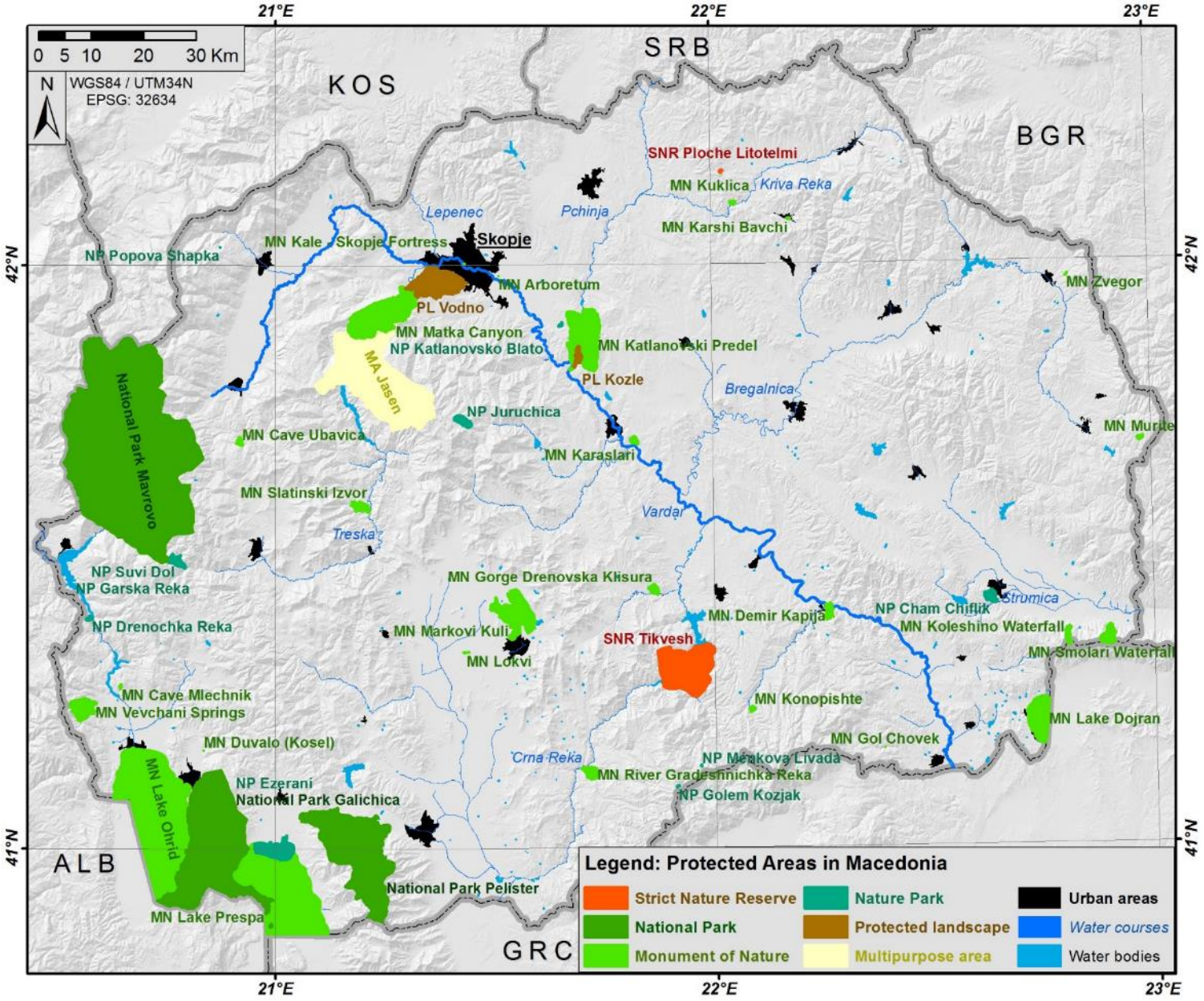
MAP 1. MAP OF MAIN ECOSYSTEMS IN THE COUNTRY



MAP 2. MAP OF THE FORESTED AREAS AND LAND USES



MAP 3. MAP OF PROTECTED AREAS, INCLUDING FOREST RESERVES



MAP 4. MAP OF AQUATIC RESOURCES